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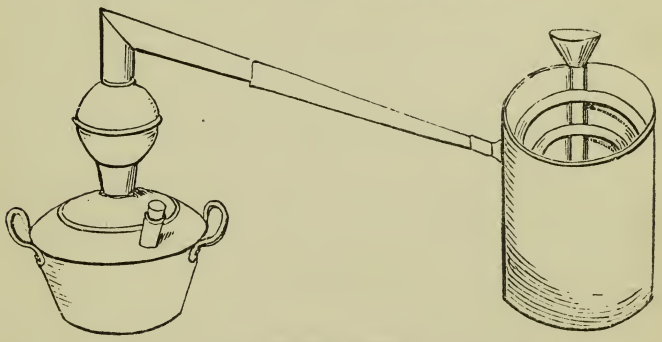

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OF

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NATURALISTIC PHOTOGRAPHY.

INTRODUCTION.

Daguerre and the French Academy.

At a meeting of the French Academy of Sciences, held in Paris on the 19th day of August, 1839, Louis Jacques Mandé Daguerre, in the presence of the flower of Parisian art, literature and science, gave a demonstration of his new discovery—the Daguerreotype. The success of the *séance* was complete, and the gathering of illustrious men was intoxicated with enthusiasm in favour of the Daguerreotype. It is, then, almost fifty years ago that the result of the work of the father of photography, Joseph Nicéphore de Niepce, who had died six years previously, and of the partner of his latter days—Daguerre—was given to the French public, for though Arago declared that "France had adopted the discovery and was proud to hand it as a present to the whole world," Daguerre, sharp business man that he was, took out a patent for his process in England on the 15th July, 1839.

It may be said, then, that for fifty years the influence of photography has been working amongst the people for better for worse; but a short half-century has photography had to develop in, and we naturally feel a little curious to know what it has been doing all this time. Has the art been lying idle and stagnating, or has it been developing and extending its roots into all the industrial, scientific and artistic fields of enterprise? Let us see what this cool young goddess, born of art and science, who generally comes to stay and finally to oust the old goddesses from their temples, has been doing these fifty years.

Retrospect of progress of photography in astronomy.

In the fields of science she has been most busy. She has been giving us photographs of the moon, the stars, and even of the nebulæ. She has recorded eclipses and a transit of Venus for us, she has drawn for us the Sun's corona, and registered those great volcanic explosions which playfully take place there periodically. She has shown us that there are stars which no telescope can find, and she has in another form registered for us the composition of the sun and of many of the stars; and now she is busy mapping out the heavens for us. Like a goddess, she plays with the planets and records with delicate taps the stars on our plates, and she runs through the vast space of the kosmos doing our biddings with a precision and delicacy never equalled—in short she is fast becoming the right hand of the astronomer.

Microscopy.

Not content with her vast triumphs in space over the infinitely great, she dives down to the infinitely small, and stores up for us portraits of the disease-bearing generation of *Schizomycetes,* the stiff-necked *bacteria,* and the wriggling *vibrio,* the rolling *micrococcus,* and the fungoid *actinomycosis*—with deadly tresses; these she pictures for us, so that we may either keep them on small plates, or else she throws them for us on large screens so that we are enabled to study their structure. On these screens too we can gaze on the structure of the proteus-like white corpuscle, and we are able to study the very cells of our tongues, our eyes, our bones, our teeth, our hairs, and to keep drawings of them such as man never had before. So the kindly bright goddess stints us in nothing, for wherever the microscope leads there will she be found at our bidding. With the greatness of an all-seeing mind, it matters not to her whether she draws the protococcus or the blood-cells of an elephant, whether she depicts the eroding cancer cell or the golden scale on the butterfly's wing—anything that we ask of her she does; if we will but be patient.

Chemistry.

But the little goddess, the light-bearer, is not content with these sciences but she must needs go and woo chemistry and register the belted zones of the spectrum and tell us the mysterious secrets of the composition of matter.

Meteorology, too, has claimed her, and she draws for the meteorologist the frowning *nimbus* and the bright rolling *cumulus*. She scratches quickly on his plate the lightning's flash, and even measures the risings and fallings of the mercuries in his long glass barometers and thin-stemmed thermometers, so that the meteorologist can go and rest in the sun; and good-naturedly, too, she hints to him that his registerings are but fumblings after her precise and delicate work. This versatile little goddess, too, is playing with and hinting to the surveyors how she will not be coy if they will but woo her, for, says she, "have I not already shown you how to measure the altitude of mountains, and how to project maps by my aid?" Meteorology. Surveying.

The geographer, too, is another lover well favoured by the dainty goddess, he always takes her on his travels now-a-days, and brings us back her inimitable drawings of skulls, savages, weapons, waterfalls, geological strata, fossils, animals, birds, trees, landscapes, and men, and we believe him when we know the light-bearer was with him, and soon in all his geographies, in all his botanies, in all his zoologies, in all his geologies, his entomologies, and all the rest of his valuable "ologies," we will find the crisp and inimitable drawings of his dainty companion. Geography.

The horny-handed engineer, too, is wooing her; he makes love to her away down in dark caissons half-buried in river beds; whilst above-ground she scatters his plans far and wide. He uses her to show how his works are growing beneath the strong arms of his horny-handed gangs, and he even uses her to determine the temperature of the depths of the sea, and the direction of oceanic currents; yes, she does the work for him and he loves her. The earnest doctor and the curious biologist are amongst her lovers, and the dainty one does not disdain their work, for she knows it to be good; for though she is fickle, she is good at heart. For them she goes into the mysterious globe of the eye, down into the hollow larynx, and into the internal ear, and drags forth drawings. The tumour-deformed leg, the tossing epileptic, the deformed Engineering. Medicine and Biology.

leprous body, the ulcerous scalp, the unsightly skin disease, the dead brain, the delicate dissection, the galloping horse, the flying gull, and erring man does she with quick and dainty strokes draw and give her lovers the physician and biologist.

Military and naval services.

Then like the Valkyria she too delights in dire war. For her heroes she writes so finely that her letters are carried in a quill beneath a pigeon's wing into and out of beleaguered cities. She draws hasty notes of the country for the leaders of an invading army, she preserves a record of the killed and she gives truthful records of the fields of battle and of the poor torn and jaded men after a battle, whilst in peace she draws for the officer the effects of the explosion of a shell, the path of a bullet through the air, or the water thrown on high like a geyser by a hidden torpedo.

Forensic medicine.

She is the warder's friend too, for she draws the skulking thief, the greedy forger, and the cruel murderer; she draws, too, the knife that stabbed in the dark, and the dress all blood-besmirched; she detects the forged bank note, and draws without quibble the position of the overturned and splintered railway car, and she shows the scorched and gutted ruins of the burnt house for the

Libraries.

insurance agent. She has her fun, too, for she twits the librarians with the ever increasing deluge of books, and hints laughingly they must one day come to her for she will show them how to keep a library in a tea-caddy.

Industrial arts.

The haggling tradesman she does not disdain, she will draw portraits of his fabrics to be circulated all over the world, she will copy the bad paintings and drawings done for him as advertisements by the pariahs of art. She reproduces trademarks and signatures, and oh, naughty goddess, she even, on the sly, copies on old yellow paper old etchings and engravings so that the connoisseur does not know the new from the old. She helps in all kinds of advertising, reproducing the scenery by railways for the railway companies, sketching topographically for tourists, drawing mothers and fathers and children for the world, so that the loved ones can go across the seas and leave themselves in form and feature; and so that the dead may not be forgotten she soothes the living with

their dear faces done in her pretty way. Nay, she even goes so far as to allow her works to be burnt on porcelain and sold in brooches, on plates and other ware.

Nor do the children love you in vain, pretty goddess, for you give them magic-lanterns, and invisible pictures of yourself; to be made visible by a little secret you tell them. You give them magic cigar-holders and stereoscopes, all this out of your bountiful lap do you Art. scatter; but, pretty dainty light-bearer, have you no love dearer to you than all these, is there none amongst your lovers that you prefer? Yes, blush not, oh, dainty one, it is the artist who sees in you a subtler, finer aid than his sorry hand, so monkey-like in its fumblings. To him you give your delicate drawings on zinc to illustrate his books, or on copper to fill his portfolios, to him you give poems of the winds whispering amongst the reed-beds, of the waves roaring in the grey gloaming, of the laughing, bright-eyed mortal sisters of yours. To him, your favoured one, your chief love, you give the subtlety of drawing of the wind-shorn and leaf-bare oak, the spirit of the wild colts on the flowery marsh, the ripple of the river and the glancing flight of the sea-fowl. Together you and he spend days and nights, mid the streams and the woods, culling the silvery flowers of nature. Oh, bright generous little goddess, who has stolen the light from the sun for mortals, and brought it to them not in a narthex reed as did Prometheus bring his living spark, but in silvery drops to be moulded to your lover's wish, be he star-gazer, light-breaker, wonder-seeker, sea-fighter or land-fighter, earth-roamer, seller-of-goods, judger-of-crimes, lover-of-toys, builder-of-bridges, curer-of-ills, or lover of the woods and streams.

The influence of photography on the sister arts of sculpture, painting, engraving, etching and wood-cutting during these fifty years has been tremendous, as have they influenced in turn photography. Sculpture has been, perhaps, least influenced, although without photography thousands of posthumous statues which now grace the streets and the squares of the world could not have been modelled at all, or could only have been very

conventionally and unsatisfactorily modelled. As it is, they are often excellent portraits. The effect of sculpture on photography has been to induce experimentalists to attempt a production of models in clay by means of an instrument called a pantograph. It is reported that these methods succeeded, but we never saw any of the productions and have little faith in the methods.

The influence of photography on painting, on the other hand, has been nothing short of marvellous, as can be seen in the great general improvement in the drawing of difficult passages. It is a common practice for painters to take photographs of their models and throw enlargements of these on to a screen when the outlines are boldly sketched in. Again, it is a practice for painters to study the delicate tonality of photography, which is of course quite legitimate. Another influence of photography on painting is that the painter tries to emulate the detail of the photograph, but this was more noticeable in the early days of photography, and it had a bad effect on painting, for the painter did not know enough of photography to know that what he was striving to imitate was due to an ignorant use of photography. He thought, as many people think now-a-days, that there is an absolute and unvarying quality in all photographs. The effect on miniature painting was disastrous; it has been all but killed by photography, and we think rightly. And it must be remembered that photography killed it notwithstanding the fact that many of the best miniature painters adopted photography as soon as they could. Newton and Cosway were both photographers. Photography also killed the itinerant portrait painter who used to stump the country and paint hideous portraits for a few shillings, or a night's lodging. Photography too, has, unfortunately, been the cause of a vast production of weak and feeble water-colours, oil-paintings and etchings. Second and third rate practitioners of these arts have simply copied photographs and supplied the colouring from their imagination, and thousands of feeble productions has been the result; this is a dishonest use of photography, but one by no means uncommon. We often have food

for reflection on the gullibility of man, when we see poor paintings and etchings exhibited at "one man" exhibitions and elsewhere, which are nothing but ruined photographs, the very drawing shows that, and the time in which such a collection of paintings is painted also hints at the method. All the drawing has been done by the photographic lens, and transferred to the panel or canvas. These are the very men who decry photography. Such work is only admissible if confessed, but of course such people as this keep it quite secret. The etchings done in this way are simply impudent. The influence of painting on photography has been great and good as a factor in the cultivation of the æsthetic faculty, but its conventionality has often been harmful.

As we have said, by the aid of photography feeble painters and etchers are able to produce fairly passable work, where otherwise their work would have been disgraceful, but wood-cutters and line engravers do not gain so much help from us, and they find photography a rival that will surely kill them both. We have gone into this vexed question in detail in the body of this work. One of the best and most noted wood engravers since Bewick's time has given it as his opinion that there is no need for wood engraving now that the "processes" can so truly reproduce pictures, for, as he says, no great original genius in wood-cutting will ever be kept back by "process work," and it is a good thing that all others should be killed.

The chief thing which at present oppresses photography is "the trade." Print sellers have accumulated stocks of engravings and etchings and as they may not come down in price, they therefore give photogravures and photographs the cold shoulder.

Such, briefly, are the effects of photography on her sister arts and of them on her.

Incredible indeed seems the all-pervading power of this light-bearing goddess. Next to printing, photography is the greatest weapon given to mankind for his intellectual advancement. The mind is lost in wonderment at the gigantic strides made by this art in its first fifty

years of development, and we feel sure if any one will take the trouble to inquire briefly what photography has done and is doing in every department of life he will be astonished by the results of his inquiries.

Branches of photography.

From what has been said it is very evident that the practice of photography must be very different in the different branches of human knowledge to which it is applied.

The application of its practice and principles has been very ably treated in some of these branches, especially the scientific branches, but hitherto there has been no book which gives only just sufficient science for artists and at the same time treats of the art side.

Aim of naturalistic photography.

We propose in this book to treat photography from the artistic standpoint. We shall give enough science to lead to a comprehension of the principles which we adduce for our arguments for naturalistic photography, and we shall give such little instruction in art as is possible by written matter, for art we hold is to be learned by practice alone. That, then, is our aim, and no one knows better than ourselves how far short of our ideal we have fallen, but we trust the task as attempted may do a little good and lead some earnest wandering workers into the right path. We know that we have not accomplished our task without errors, all we plead is that we have endeavoured to reduce the number to a minimum, and where we have failed we trust those who detect our failures will kindly, not carpingly, communicate them to us, so that if we ever reach a second edition we may therein be regenerated.

Contents of book.

The photographic student, whose aim is to make pictures, will find in this book all directions, such as the choosing of apparatus, the science which must be learned, the pictures and sculpture which must be studied, the art canons which are to be avoided, the technique to be learned, including all manipulations; the fundamental principles of art, and a critical *résumé* of conventional art canons, including much other advice.

In addition to this the book is an argument for the Naturalistic school of photography, of which we preached

the first gospel in an address delivered in London in March, 1886.[1]

The necessity of this book may not be patent to artists who do not know the photographic world, but if they will consider for a moment the present position of a student of photography, whose aim is to produce artistic work, they will see the necessity for some such work. The position of the photographic world at present is this: nearly all the text-books teach how to cultivate the scientific side of photography, and they are so diffuse that we find photo-micrography, spectrum analysis and art all mixed up together, and when we assure the artistic reader that the few books and articles published with a view to teaching art, contain *résumés* of Burnet's teachings, as set forth in his well-known "Treatise on Painting," and that the widest read of these books lays down laws for the sizes of pictures as advocated by that "eminent painter Norman Macbeth," cautions the student not to take pictures on grey days, and contains various other erroneous ideas, we say when artists know this, and in addition that there is no book in which "tone" is even defined, they will perhaps understand the necessity for some such book as this. Lastly, the artist must remember that photographers are very loath to listen to any one but photographers on any subject whatever.

To give the student a clear insight into the first principles of art is of course, as we have said, the chief aim of the book, but besides that it is an attempt to start a departure from the scientific side of photography. This departure must be made, and the time is now ripe. It should be clearly and definitely understood, that although a preliminary scientific education is necessary for all photographers, after that preliminary education the paths and aims of the scientist, industrial photographer and artist, lie widely apart. This matter should be kept constantly in view, and specialists in one branch should not meddle with other branches. The art has so extended its fields for work that there is scope, even in a sub-branch of the scientific branch to occupy the

[1] Vide *Amateur Photographer* for March 11, 1886.

full energies and attention of the most able men. At exhibitions, too, the three great divisions into which photography falls should be kept rigidly separated. The writer sees in all these branches equal good and equal use, but he sees also the necessity of keeping their aims and methods separate. That this division is now possible and necessary is, from the evolutionary standpoint, the greatest sign of development. The author feels convinced that if any student is going to succeed in any branch he must not scatter his energies, but devote himself with singlemindedness to that particular branch. Directly the aims and methods of the separate branches of the art are fully recognized there will no longer be ignorance and misunderstandings of first principles. We shall not hear a first-rate lantern slide described as artistic, because it is untouched, and we shall not hear of a "high-art" photographer criticizing photo-micrographs of bacteria, matters that none but a medical microscopist can criticize. And above all, we shall not have the hack-writer talking of our "art-science."

We have drawn up a rough table of classification to illustrate our meaning, but of course it must be remembered that this division is arbitrary, but it would, we think. be a good working classification.

The Art of Photography.

A.—Art Division.

Art division.

In this division the aim of the work is to give æsthetic pleasure *alone,* and the artist's only wish is to produce works of art. Such work can be judged only by trained artists, and the aims and scope of such work can be fully appreciated only by trained artists. Photographers who qualify themselves by an art training, and their works alone, belong to this class. They alone are artists. Included in this class would be original artists, first-rate photo-engravers, and typo-blockmakers, whose aim is to reproduce in facsimile all the artistic quality of *original works of art.* Such photographers should have an artistic training without fail, as all the best have had.

B.—Science Division.

Science Division.

In this division the aim of the work is to investigate the phenomena of nature, and by experiment to make new discoveries, and corroborate or falsify old experiments. The workers in this great and valuable department of photography may be divided into—

a. Scientific experimentalists in all branches of science.
b. Chemists and spectrum-analysts.
c. Astronomers.
d. Microscopists.
e. Engineers.
f. Military and naval photographers.
g. Meteorologists.
h. Biologists.
i. Geographers.
j. Geologists.
k. Medical men.
l. Physicists.

These sub-divisions include all that vast host of *trained* scientific men who are photographers in connection with their work. Their aim is the advancement of science.

C.—Industrial Division.

Industrial Division.

This class includes that great majority of the photographic world—the craftsmen. These men have learned the tenets of their craft, and go on from day to day meeting the industrial requirements of the age, producing good useful work, and often filling their pockets at the same time. Their aim is utilitarian, but in some branches they may at the same time aim to give an æsthetic pleasure by their productions, but this is always *subordinated to the utility* of the work. When they aim at giving this æsthetic pleasure as well, they become art-craftsmen.

Amongst these craftsmen are included photographers who will take any one or anything if paid to do so, such forming what is known as "professional photographers."

All reproducers of pictures, patterns, &c., by photo-mechanical processes, in which the aim is not solely æsthetic pleasure, as in reproducing topographic views. All plate makers. Transparency, opal, lantern-slide, and stereoscopic slide makers. All *facsimile* photographers; photographers of pictures, statuary, &c. All makers of invisible photographs, magic cigar photographs. All operators who work under the guidance of artists or scientists for pay, they not having artistic and scientific training themselves, as in the preparation of lantern slides for a biologist, and all enlargers, operators, spotters, printers, retouchers, mounters, &c. Producers of porcelain pictures. Producers of facsimile type blocks and copper plates, with no artistic aim, *et id genus omne.* All photographs produced for amusement by the untrained in art or science. All photographers who produce pattern photographs, "bits" of scenery, and animals for artists to work from.

It will thus be clear to the student that all these photographers serve useful purposes and each is invaluable in his way, but we repeat the aim of the three groups of photographers is very different and quite distinct, as distinct as in the drawing world are the etchings of Rembrandt, the scientific drawings of Huxley, and the pattern plates of a store catalogue. All are useful in their place, and who shall dare to say which is more useful than the other; but all are distinct, and can in no way be compared with one another or classed together any more than can the poems of Mr. Swinburne, the text of Professor Tyndall's "Light," and the Blue-books. All can be good in their way, but the aims and methods of the one must not be confounded with the aims and methods of the other, and we fear that such is the case in the photographic world at present.

"Amateur" and "professional" photographers.

There is one obstacle which we must clear from the student's path in this introduction, and that is the confusion of terms "professional" and "amateur," as used in the photographic world; for in this world it must be understood that these terms are used as in no other world. Briefly, photographers mean by "professional"

one who gains his living by photography, and an "amateur" means one who does not practise photography for his living. The folly of this is obvious, for by this definition the greatest English scientific photographer, Captain Abney, is an "amateur," and the sands photographer at Margate is a "professional."

This anomalous definition of the two classes has led journalists into strange errors and mistakes. We remember one journal, which prides itself upon its accuracy, breaking into satirical writing because the judges at a certain photographic exhibition were to be "amateurs." Of course the journalist who wrote that article used "amateur" in the ordinary English sense, and hence his amusement; but, as we have shown, he made a great error in fact.

In reality professional photographers are those who have studied one branch of photography thoroughly, and are masters of all its resources, and no others. It is no question of £ s. d., this "professional" and "amateur" question, but a question of knowledge and capacity. An amateur is a dabbler without aim, without knowledge, and often without capacity, no matter how many of his productions he may sell. We think, then, the words "professional" and "amateur" should be abolished from the photographic world, until that day shall arise when there is a central training and examining body, that shall have the power of making real professional photographers, and when all possessing a diploma would be professionals and all others amateurs.

A college of photography and diplomas.

We fondly hope that a college of photography may one day be instituted, where good art and science training may be obtained, where regular classes will be held by professors and regular terms kept, and where some sort of distinguishing diploma as Member of the Royal Photographic College will be given to all who pass certain examinations. The M.R.P.C. would then have a status, and the profession which would then exist—but only exists as a trade now — would be able to draw up salutary laws for the government and good behaviour of its members, and the status of photography

would be everywhere raised. The diploma of F.R.P.C. (Fellow of the Royal Photographic College) could be given to distinguish photographers at home and abroad as an honorary title.

But if such an institution is to have weight it must procure a charter. Money must be obtained to give honorariums to the lecturers, and the lectureships must be held by the best men. To begin with, all photographers in practice could be admitted upon passing a very simple examination in the subjects of elementary education and photography. If ever such a thing is brought about—and we trust it may be—we should find many gentlemen of education would join the ranks, as indeed they are doing now; and with the taste and education they brought to the work, we should see them working quietly in studios like painters, and the "show-case" and the vulgar mounts with medals and other decorations, and the "shop-window" and the "shop-feeling" would all disappear. We need not despair if we will all do what is in us to kill "vulgarity," for painters were not so well off as most photographers are now but a very few decades ago. What gives us hope for these golden days is the fact that we number in our ranks in some branch or the other probably more intellectual men than any other calling. We have an emperor, and quite a profusion of royal-blooded wights and aristocrats, whilst every learned profession gives us of its best. Law, medicine, art, science, all contribute largely important members to swell our ranks.

Here, then, we must end our introductory remarks, and we wish the student who comes to the study of photography with capacity and earnestness all success.

P. H. E.

Chiswick, *July*, 1888.

BOOK I.

TERMINOLOGY AND ARGUMENT.

"The dignity of the snow-capped mountain is lost in distinctness, but the joy of the tourist is to recognize the traveller on the top. The desire to see, for the sake of seeing, is, with the mass, alone the one to be grasped, hence the delight in detail."

J. M. Whistler.

CHAPTER I.

TERMINOLOGY.

Terminology.

It were better at the outset to define our terms, for nothing leads more certainly to confusion in studying a subject than a hazy conception of the meanings of words and expressions. Perhaps in no branch of writing have words so many meanings as in writings on Art, where every expositor seems intent upon having his own word or expression. For this reason we wish clearly to define the words and art expressions in use in this book. Not, be it understood, that we claim in any way for any definitions that they are the correct and final definitions of the expressions used, but we define what *we* mean by certain words and terms so that the reader may understand clearly the text in which such words occur, our aim being to be clear and to avoid all empty phraseology.

Analysis.

Seizing the impression of natural objects, and rendering this impression in its essentials has been called analyzing nature; and the impression so rendered is an analysis.

Art.

Art is the application of knowledge for certain ends. But Art is raised to *Fine Art* when man so applies this knowledge that he affects the intellect through the senses, and so produces æsthetic pleasure in us; and the man so raising an art into a fine art is an *artist*. Therefore the real test as to whether the result of any method of expression is a fine art or not, depends upon how much of the intellectual element is required in its production. Thus Photography may be, and is, in the hands of an artist, a method of expression producing works of fine

art, because no such works can be produced in photography by a man who is not an artist; whereas organ-grinding is a mode of expressing music, but the result is not a fine art, because no intellect, and therefore no artist, is required to produce the expression; a monkey might produce as good music on a hand-organ as could a Beethoven.

Art-science. A compound term applied by some writers to photography, and by others to all crafts founded upon science. It is an absurd term, and its use should be strongly discouraged. It is to be found in no good dictionary. It is an unmeaning expression, because photography is an art founded upon science, just as is etching, and to call photography an "art-science" is to show great ignorance of the English language, and especially of the meaning of the two words of which the expression is formed—art and science.

Artistic. A word greatly misused by photographers. When applied to a person, it means one *trained in art*, and when applied to a work, it means leaving the impression of an artist's handiwork; and this photographers should not forget, neither should they forget that an artist is one *trained in art*. This should especially be borne in mind by those who dub themselves "artist-photographers," whatever they may mean by that compound. Photographers should wait for other people to call them artists, and when artists call a photographer a brother artist he will probably deserve the title, and not before. In the same way they should refrain from calling things artistic or inartistic, for it must be remembered that to use these words implies that the speaker has been *trained in art*.

Breadth. Is a term used to describe simple arrangements of light and shade or colour, which produce a sense of the largeness and space of nature. All great work has breadth, all petty work is devoid of it; for petty minds cannot see the breadth in nature, so they are naturally unable to get it into their work.

Colour. "This theory of what constitutes fine colour is one of the peculiar traits of the old-time painters, and of the landscape critic who studies nature in the National

Gallery. If one may judge by their remarks or by the examples they worship, a painting to be fine in colour must first of all be brown, or at least yellow; the shadows must all be hot and transparent; lakes and crimsons must be used freely, while a certain amount of very deep blue should be introduced somewhere, that the rest of the picture may appear the warmer by the contrast. Above all things it must not be natural, or it ceases to be fine and sinks to the level of the commonplace. In fact, these colourists appear to admire a picture from just the same point of view they would an Indian carpet, a Persian rug, old tapestry, or any other conventional design, and seem to judge of it by similar standards; if one suggests that it has no resemblance to what it claims to represent, they reply, 'Ah, but it is a glorious frame, full of colour!' But colour in painting can only be really fine so far as it is true to nature. A grey picture may be just as fine in colour as the most gorgeous. Beauty in colour, as in form, depends on its fitness and truth."—*T. F. Goodall.*

The vulgar view of fine colour is easily explained on evolutionary grounds, it is but a harking back to the instincts of the frugivorous apes—our ancestors.

Creative artist.

There is much misconception as to the use of the word "creator" in the arts. Some think only those gentlemen who paint mythological pictures, or story-telling pictures, are creators. Of course such distinction is absurd; any artist is a creator when he produces a picture or writes a poem; he creates the picture or speech by which he appeals to others. He is the author, creator, or whatever you like to call him, he is responsible for its existence.

Fine art.

Versifying, Prose-writing, Music, Sculpture, Painting, Photography, Etching, Engraving, and Acting, are all arts, but none is in itself a fine art, yet each and all can be raised to the dignity of a fine art when an artist by any of these methods of expression so raises his art by his intellect to be a fine art. For this reason every one who writes verse and prose, who sculpts, paints, photographs, etches, engraves, is not necessarily an artist at all, for he

does not necessarily have the intellect, or use it in practising his art. It has long been customary to call all painters and sculptors artists, as it has long been customary in Edinburgh to call all medical students doctors. But in both cases the terms are equally loosely applied. Our definition, then, of an artist is a person who whether by verse, prose, sculpture, painting, photography, etching, engraving, or music, raises his art to a fine art by his work, and the works of such artist alone are works of art.

High art.

In a word, high and low art are absurd terms, no art is high or low. Art is either good or bad art, not high or low, except when skied or floored at exhibitions. "High art" and "higher artistic sense" we shall not use because they are meaningless terms, for if they are not meaningless then every picture falls under one or other category, high or low; if so let some one classify all pictures into these two divisions and he will find himself famous—as the laughing-stock of the world.

Ideal.

A volume might be written on this word, but it would be a volume of words with little meaning. As applied to art, the meaning of "ideal" has generally been that of something existing in fancy or in imagination, something visionary, an imaginary type of perfection. G. H. Lewes says, "Nothing exists but what is perceived;" we would say, nothing exists *for us* but what is perceived, and this we would make a first principle of all art. A work of pictorial art is no abstract thing, but a physical fact, and must be judged by physical laws. If a man draws a monster which does not exist, what is it? It is but a modified form of some existing thing or combination of things, and is after all not half so terrible as many realities. What is more terrible than some of the snakes, than the octopus, than the green slimy crabs of our own waters? Certainly none of the dragons and monsters drawn from the imagination is half so horrible. Did the great Greek artist, Æschylus, describe a dragon as gnawing at the liver of Prometheus? No, he simply drew the picture of a vulture as being sufficiently emblematic. But let us assume, for the sake of argument, that the

dragon is more dreadful than any reality, even then the pictorial and glyptic artist cannot use it, for as he has no model to work from, the technique will necessarily be bad, there will be no subtleties of tone, of colour, of drawing, all which make nature so wonderful and beautiful. The dragon will be a pure caricature, that is all. Again, some people consider it wonderful that a painter takes a myth and renders it on canvas, and he is called "learned" and "scholarly" for this work. But what does he do? Let us say he wishes to paint the Judgment of Paris. He, if he is a good painter, will paint the background from physical matter, shaped as nearly like the Greek as possible, and he will paint the Paris and the ladies from living models. The work may be perfect technically, but where is the Greek part of it; what, then, does the painter rely upon? Why the *Greek story*, for if not why does he not call it by a modern name? But no, he relies upon the well-known story—the Judgment of Paris—*in fact he is taking the greater part of the merit which belongs to another man.* The story of the Judgment of Paris is not his, yet it is that which draws the public; and these men are called original, and clever, and learned. Jean François Millet, in one of his scenes of Peasant Life, has more originality than all of those others put together. Many people, not conversant with the methods of art, think artists draw and paint and sculpt things "out of their heads." Well, some do, but no good artist ever did. We have in our possession a beautiful low relief in marble, done from a well-known Italian model in London. The work is as good as any work the Greeks did, the type is most admirable, and it was done by one of the sternest naturalistic sculptors of to-day.

A highly educated friend, an old Oxford man, called on us not long ago, and was greatly taken with the head; after looking at it a long while, he turned to us and said, "An ideal head, of course!" So it is the cant of "idealism" runs through the world. But we have heard some of the most original and naturalistic artists use the word "ideal," and on cornering them, they admitted it was misleading to others for them to use it; but they meant by it simply

intellectual, that is, the work of art had been done with intelligence and knowledge, but every suggestion had been taken from nature. The word ideal, to our mind, is so apt to mislead that we shall not use it.

Imaginative. = Ideal = Soulful = O.

Impressionism. To us Impressionism means the same as naturalism, but since the word allows so much latitude to the artist, even to the verging on absurdity, we prefer the term Naturalism, because in the latter the work can always be referred to a standard—Nature. Whereas if impressionism is used, the painter can always claim that he sees so much, and only so much, of Nature; and each individual painter thus becomes a standard for himself and others, and there is no natural standard for all A genius like Manet tried to work out new ways of looking at nature, and that was legitimate, but when weak followers took up his "manner" and had not his genius, the result was eccentricity. For these reasons, therefore, we prefer and have used the term "naturalism" throughout this work. But, as we have said, we regard the terms "impressionism" and "naturalism" as fundamentally synonymous, although we think the work of the so-called modern 'impressionists" but a passing craze.

Interpreting. The method of rendering a picture as it appears to the eye has been called interpreting nature. Perhaps interpreting is as good an expression as any, for the artist in his language (for art is only a language) interprets or explains his view of nature by his picture.

Local colour. "The local or proper colour of an object (*Körper farbe*) is that which it shows in common white light, while the illumination colour (*Licht-farbe*) is that which is produced by coloured light. Thus the red of some sandstone rocks, seen by common white light, is their proper local colour, that of a snow mountain in the rays of the setting sun is an illumination colour."—*E. Atkinson*, Ph.D., F.R.S.

Low art. Naturalism. See high art.

By this term we mean the true and natural expression of the impression of nature by an art. Now it will immediately be said that all men see nature differently.

Granted. But the artist sees deeper, penetrates more into the beauty and mystery of nature than the commonplace man. *The beauty is there in nature.* It has been thus from the beginning, so the artist's work is no idealizing of nature; but through quicker sympathies and training the good artist sees the deeper and more fundamental beauties, and he seizes upon them, "tears them out," as Durer says, and renders them on his canvas, or on his photographic plate, or on his written page. And therefore the work is the test of the man—for by the work we see whether the man's mind is commonplace or not. It is for this reason, therefore, that artists are the best judges of pictures, and even a trained second-rate painter will recognize a good picture far quicker than a layman, though he may not be able to produce such a one himself. Of course Naturalism premisses that all the suggestions for the work are taken from and studied from nature. The subject in nature must be the thing which strikes the man and moves him to render it, not the plate he has to fill. Directly he begins thinking how he can fill a certain canvas or plate he is no longer naturalistic, he may even then show he is a good draughtsman or a good colourist, but he will not show that he is an artist. Naturalistic painters know well enough that very often painting in a tree or some other subject might improve the picture in the eyes of many, but they will not put it in because they have *not the tree before them to study from.* Again, it has been said that arranging a foreground and then painting it might improve the picture, but the naturalistic painter says no, by so doing "all the little subtleties are lost, which give quality to the picture!" Nature, too, is so full of surprises that, all things considered, she is best painted as she is. Aristotle of old called poetry "an imitative art," and we do not think any one has ever given a better definition of poetry, though the word "imitative" must not in our present state of knowledge be used rigidly. The poetry is all in nature, all pathos and tragedy is in nature, and only wants finding and tearing forth. But there's the rub, the best work looks so easy to do *when it is done.*

Durer.

Aristotle

Burns. Does not Burns' "Ode to a field-mouse" look easy to write? This, then, is what we understand by naturalism, that all suggestions should come from nature, and all techniques should be employed to give as true an *impression* of nature as possible.

Original. This is a mightily misused word. Only those artists can be called original who have something *new to say*, no matter by what methods they say it. A photograph may be far more original than a painting.

Photographic. Some of the best writers and journalists of the day have adopted the use of the word "photographic," as applying to written descriptions of scenes which are absolutely correct in detail and bald fact, though they are lacking in sentiment and poetry. What a trap these literary men have fallen into will be seen in this work, for what they think so true often is utterly false. And, on the other hand, photography is capable of producing pictures full of sentiment and poetry. The word "photographic" should not be applied to anything except photography. No handwriting can be "photographic." The use of the word, when applied to writing, leads to a confusion of different phenomena, and therefore to deceptive inferences. This cannot be too strongly insisted upon, as some cultured writers have been guilty of the wrong use of the word "photographic," and therefore of writing bad English.

Quality. Quality is used when speaking of a picture or work which has in it artistic properties of a special character, in a word, artistic properties which are distinctive and characteristic of the fineness and subtlety of nature.

Realism. By Naturalism it will be seen that we mean a very different thing from Realism. The realist makes no analysis, he is satisfied with the motes and leaves out the sunbeam. He will, in so far as he is able, paint all the veins of the leaves as they really are, and not as *they look* as a whole. For example, the realist, if painting a tree a hundred yards off, would not strive to render the tree as it looks to him from where he is sitting, but he would probably gather leaves of the tree and place them before him, and paint them as they looked within twelve inches of his

eyes, and as the modern Pre-Raphaelites did, he might even imitate the local colour of things themselves. Whereas the naturalistic painter would care for none of these things, he would endeavour to express the impression of the tree as it *appeared* to him when standing a hundred yards off, the tree taken as a whole, and as it looked, modified as it would be by various phenomena and accidental circumstances. The naturalist's work we should call true to nature. The realist's false to nature. The work of the realist would do well for a botany but not for a picture, there is no scope for fine art in realism, realism belongs to the province of science. This we shall still further illustrate in the following pages. Pre-Raphaelites.

Relative tone or value is the difference in the amount of light received on the different planes of objects when compared with one another. Relative tone and value.

Artists speak of the "sentiment of nature" as a highly desirable quality in a picture. This means that naturalism should have been the leading idea which has governed the general conception and execution of the work. Thus the sentiment of nature is a healthful and highly desirable quality in a picture. Thus "true in sentiment" is a term of high praise. "Sentiment" is really normal sympathetic "feeling." Sentiment.

As opposed to sentiment, is a highly undesirable quality, and a quality to be seen in all bad work. It is an *affectation* of *sentiment*, and relies by artificiality and mawkishness upon appealing to the morbid and uncultured. It is the bane of English art. The one is normal, the other morbid. Sentimentality.

Soul = Vis medicatrix = Plastic force = Vital force = Vital principle = O. The word is, however, used by some of the most advanced thinkers in art, and when asked to explain it they say they mean by it "the fundamental." From what we can gather, the word "soul" is the formula by which they express the sum total of qualities which make up the life of the individual. Thus a man when he has got the "soul" into a statue, has not only rendered the organic *structure* of the model, but also all the model's subtleties of harmony, of movement, Soul.

and expression, and thought, which are due to the *physical fact* of his being a living organism. This "life" is of course the fundamental thing, and first thing to obtain in any work of art. In this way, then, we can understand the use of the word "soul" as synonymous with the "life" of the model. This "soul" or life is always found in nature, in the model, and the artist seizes upon it first, and subdues all things to it. "Soul," then, to us is a term for the expression of the epitome of the characteristics of a living thing. The Egyptians expressed the "soul" or life of a lion, Landseer did not.

Technique. By technique is meant a knowledge of optics and chemistry, and of the preparation and employment of the photographic materials by the means of which pictures are secured. It does in no way refer to the *manner* of using these materials, that is the "practice."

Tone. To begin with, as this book is for photographers, we must tell them they invariably use the word tone in a wrong sense. What photographers call "tone" should properly be colour or tint, thus: a brown tint, a purple tint, or colour.

The correct meaning of tone is the amount of light received upon the different planes of an object.

Transcript of nature. "'A mere transcript of nature' is one of the stock phrases of the art critic, and of many artists of a certain school. The precise meaning attached to it puzzles us; were it not always used as a term of reproach, we should believe it the highest praise that could be bestowed upon a picture. What adds to our perplexity is that the phrase is generally applied by the critic to work which has nothing in common with nature about it; and is used by artists who themselves have never in their lives painted a picture with the simplest values correct, as though transcribing nature to canvas were a stage in the painter's development through which they had passed, and which was now beneath them. The critic must have but a very superficial acquaintance with nature who applies this term, as is frequently done, to work in which all the subtleties of nature are wanting. We have heard of pictures in which no two tones have been in right relation

to one another, in which noisy detail has been mistaken for finish, and the mingling of decision and indecision in fine opposition—the mysterious lost and found, the chief charm of nature—has been utterly unfelt, described as 'transcripts of nature.' Those artists who use the phrase, adopt it as a convenient barricade behind which they may defend their own incompetence."—*T. F. Goodall.*

All photographers would do well to lay these remarks to heart. Instead of it being an easy thing to paint "a mere transcript of nature," we shall show it to be *utterly impossible.* No man can do this either by painting or photography, he can only give a translation, or impression, as Leonardo Da Vinci said long ago; but he can give this impression truly or falsely. Da Vinci.

CHAPTER II.

NATURALISM IN PICTORIAL AND GLYPTIC ART.

An inquiry into the influence of the study of nature on art.

In this chapter we shall endeavour to trace the influence of the study of nature on all the best art up to the present day. In order to do this it will be necessary to follow in chronological order the development of art, and we propose taking as our guide in this matter Messrs. Woltmann and Woermann, who seem the most trustworthy and most recent of art historians. We feel, however, that we must state our attitude towards them as historians of art. For the main historical facts, we willingly accept as authorities these writers, since they have studied the matter, but when these historians try to trace the causes and effects of different phases of art on contemporary life then we entirely part company from them, for there are so many wheels within wheels in this complex comedy of life that we cannot with patience listen to searchers of manuscripts and students of autographs, who trace the fall of an empire to an oil painting, or the decadence of painting to the cheapness of wheat; such dreams may still serve, as they have always served, as a peg whereon to hang rhetorical rhapsodies, but they can have no attraction for scientific minds. What we propose, then, is briefly to compile a short outline, consisting of the salient facts in the history of art, in so far as they bear on our subject, that is, how far the best artists have been naturalistic, and how true in impression their interpretation of nature. When we agree with any of the critical remarks of these gentlemen, we shall quote them in full, acknowledging them in the usual way, but we reserve to ourselves the right to differ entirely

Woltmann and Woermann.

from them on artistic points. We ourselves feel much diffidence in advancing any critical remarks of our own upon these arts, for we are convinced, after a long and practical study of the subject, that no one can criticize any branch of art *and the criticism be authoritative*, unless he be a practical master artist in the branch of art which he is criticizing; but as our opinions have been put to the touchstone of some first-rate practical artists in other branches than our own, we offer them, standing always ready to be corrected by any good practical artist on any point. As to who are good artists is again another wide question. Certainly their name is not legion.

Criticism. Our object in traversing all this ground, then, is one of inquiry, to really see how far "naturalism" is the only wear for all good art, and we have done it in an impartial spirit, arriving at the conclusion that in all the glyptic and pictorial arts the touchstone answers. How far this is the case with the arts of Fiction, Poetry, &c., is a more complex matter, and one we cannot now deal with, but we feel that in the literary arts the matter is very different, for in these arts we are not confined, as we are in the pictorial and glyptic arts, to physical facts and their representation; for there is no such thing as abstract beauty of form or colour. Art has served as a peg on which to hang all sorts of fads—fine writing, very admirable in its place—morality, not to be despised—classical knowledge and literature generally, both of the highest æsthetic value, but in no way connected with the glyptic and pictorial arts. Naturalistic art has been found and lost and lost and found time after time, and it is because the Dutch, French, English and American artists of to-day are finding it again that we feel hopeful for the art of the future, and towards the idealists we feel like the sculptor whom we heard remark, after reading an empty article on "Idealism" in Greek art, as shown by the Greek coins, "the fellow is either a crank or an imbecile, God help him."

Idealism.

Our aim. Our object is, by our notes, to lead our readers to the works of art themselves, hoping that by this means they will, to some extent, educate themselves and finally form independent judgments on art matters. Much of the

lamentable ignorance existing on these subjects is due to the acceptance of the dicta of writers on pictures, without the readers seeing the pictures themselves. We earnestly beg, therefore, of any one who may be sufficiently interested in the subject as to read this book, that he will go and see the original pictures and sculptures cited; all of which are within easy reach. It was our original intention to introduce photographic reproductions of the best pieces of sculpture, and the best pictures into this work, but we have decided against so doing, fearing that the reader might be tempted to look at the reproductions and neglect the originals, and a translation, however good it may be, is but a small part of the truth. In thus expressing our conclusions on naturalism in art, we do not set up as the preacher of any new gospel. Such opinions as ours are as old as the art of ancient Greece, nay older, for from the early days of Egypt downwards these ideas have been held, we shall find, by great artists in all ages. It is only in the application of these principles to photography that we presume to claim any originality.

Egyptian Art.

Egyptian art.

On examining specimens of Egyptian art, whether it be their paintings, architecture, sculpture or book illustrations (the papyri), one is struck by the wonderful simplicity, decision and force with which they expressed themselves. The history of Egypt has been so little studied, save by students of history, and the old popular stories concerning the nations of the past are so inaccurate and misleading, that one is at first surprised to find such power in the works of those whom we were taught, not so long ago, to look upon as Philistines; so that we might gaze on the Pyramids of Gizeh, the statues of Rameses, and the granite lions, with the wonderment of incomprehension. But now, of course, every one knows that the Egyptians were masters in certain directions, where we are but in our infancy. Even in their *cavi relievi* and wall paintings, though these latter are but tinted outlines, they are not the outlines of childish draughtsmen, weak and unmeaning,

but they show the force of a consummate skill that in one bold outline can give all the essentials of a man, bird or beast, so that the picture looks living and doing. All through their work there is a bigness of conception, a solid grip of nature which makes their work surpass many of the elaborately finished and richly detailed pictures of our modern art galleries.

Works to be studied.

Let us call the reader's attention to such examples as are easily to be seen, namely, the granite lions, the *cavi relievi* and the papyri in the British Museum. The lions, which are remarkable for strength of character and truthfulness of impression, may be taken as representative of the greatest period of Egyptian art, a period which ended about the time of Rameses II.; for after that time the artist began to neglect the study of nature, and gradual decadence set in.

The lions.

We strongly advise all our readers to go to the British Museum and look well at these lions. They are hewn from granite, or porphyry, the hardest of stones, they have conventional moustaches, and are lying in conventional positions, yet withal, there is a wonderful expression of life and reserved strength about them which makes you respect them, stone though they be; and they convey to you, as you look on their long lithe flanks so broadly and simply treated, the truthful impression of strong and merciless *animals*. Your thoughts involuntarily turn from them to Landseer's bronze lions guarding Trafalgar Square. In them you remember all the tufts of hair correctly rendered, even to the wool in the ears, the mane, the moustaches. Even the claws are there, and yet you feel instinctively you would rather meet those tame cats of Trafalgar Square, with all their claws, than the Egyptian lions in the British Museum. The reason of this is that the Egyptians knew how to epitomize, so as to express the fundamental characteristics of the lion, they cared not to say how many hairs went to make up the tufted tail, nor yet how many claws each paw should have, but what they tried to do, and succeeded in doing, was to convey a sense of his power and animalism, or to convey, in short, an impression of *his nature*.

Landseer's lions.

These lions were the outcome of the best period of Egyptian sculpture. The Egyptian artists who carved those lions had been striving to interpret Nature, and hence their great success; but as soon as their successors began to neglect nature, and took to drawing up rules, they went wrong, and produced caricatures. We read that after the time of Rameses II. "every figure is now mathematically designed according to a prescribed canon of numerical proportions between the parts."

Rameses II. and decadence.

All this we can trace for ourselves in the plates supplied with Wilkinson's learned work, entitled, "The Ancient Egyptians." We see in those plates that something has happened to the people and objects represented, something that makes them no longer tell their own story, they no longer look alive, but are meaningless; the reason of this falling off was that the artist no longer used his eyes to any purpose, but did what was then supposed to be the right thing to do, namely, followed the laws laid down by some men of narrow intellect—laws called as now the "canons of art." The very life of the Egyptian artists of that period was against good work, for they were incorporated into guilds, and the laws of caste worked as harmfully as they now do in the Orient. There is, then, distinct evidence that on the one hand the Egyptian artists of the best period, when untrammelled by conventionality, created works which, though lacking the innumerable subtleties of later Greek art, yet possessed, as far as they went, the first essential of all art—truth of impression. Again, on the other hand, directly anything like "rules of art" appeared, and the study of nature was neglected, their art degenerated into meaningless conventionality, and as this conventionality and neglect of nature were never cast aside, the art of Egypt never developed beyond the work done by the artists who carved the stone lions.

Wilkinson's "Ancient Egyptians."

Artists' status.

Monarchies of Western Asia.

Assyrian art differed from that of Egypt in that the outline of the figures was much stronger, and that they

Assyrian art.

painted their bas-reliefs; but the "imitation of nature was the watchword" in Assyria, as it was in Babylon.

Assyrian bas-reliefs.

In studying the Assyrian bas-reliefs, those interested in the subject should go to the Assyrian rooms in the basement of the British Museum, and look at the reliefs of Bani-Pal—the famous lion-hunting scenes. There is, of course, much conventionality in the work, as there was in that of the Egyptians; but no observer can fail to detect that the Assyrians were naturalistic to a degree that strikes us as marvellous when we consider the subjects they were treating. Note the lioness, wounded in the spine, dragging her hindquarters painfully along. Does this not give a powerful impression of the wounded animal? and does it not occur to you how wonderful was the power of the man who in so little expressed and conveys to you so much. Consider when those Assyrian sculptors lived. Look, too, at the bas-reliefs numbered 47 and 49; and in 50 note the marvellous truthfulness of impression of the horseman, who is riding at a gallop. There is life and movement in the work. Look, too, at the laden mules in bas-reliefs numbers 70 and 72. Such works as these were done by great men in art, and though crudeness of methods prevented them from rivalling some of the later work, their work is at least honest, and, as far as it goes, naturalistic. The work does not say all that there is to say about the subject; but it does say what is *most essential*, and by doing that is artistically greater than work done by scores of modern men. In addition to their artistic value, how interesting are these works as records of history. Indisputable, as written history can never be, they are to us a true record of the life and times. They constitute historical art in its only good sense.

The lion-hunt.

Historical value of the bas-reliefs.

Ancient Greek and Italian Art.

Ancient Greek and Italian art.

In discussing Greek *painting* we shall rely entirely upon the erudite historical work of Messrs. Woltmann and Woermann, giving a short *résumé* of their remarks on the subject.

No Greek paintings extant.

This is absolutely necessary, as not one specimen of Greek painting has come down to us. But on the other hand, in dealing with Greek and Græco-Roman sculpture we shall base our remarks on the Greek and Græco-Roman sculpture in the British Museum.

History of Greek painting.

Beginning then with Greek painting, let us see what the historians tell us. They begin by saying, in painting "the Greeks effected nothing short of a revolution. . . . by right of which they deserve the glory of having first made painting a truthful mirror of realities." This fact, that their pictorial art reached such perfection, is not generally known, for the reason that the assertion rests on written testimony,—but it is reliable testimony. The historians "insist on the fact that no single work of any one of the famous painters recognized in the history of Greek art has survived to our time." Let us then briefly trace the rise of Greek painting till it culminated in Apelles. Polygnotos (B.C. 475-55) is the first name we hear of, and of his works we are told, "they were just as far from being really complete pictorial representations as the wall-pictures of the Assyrians and Egyptians themselves," although in some particulars there must have been a distinct advancement on the work of the orientals. For example, we are told Polygnotos painted the "fishes of Acheron shadowy grey, and the pebbles of the river-bed so that they could be seen through the water." Polygnotos fell, however, into a pitfall which has entrapped many painters since, he painted imaginative pictures. We are told he "was a painter of heroes," some of his school attempted portraiture, "but painting though in this age was still a mere system of tinted outline design." Then followed Agatharchos, "the leader of a real revolution, a revolution by which art was enabled to achieve great and decisive progress towards a system of representation corresponding with the laws of optics and the full truth of nature." Agatharchos was a scene-painter, and was no doubt led by striving for naturalism in his scenery to study naturalism in painting generally. As the historians remark, "In scene-painting as thus practised, we find the origins not only of all representations

Polygnotos.

Agatharchos.

Scene-painting.

of determinate backgrounds, but also, and more especially, of landscape painting. It is impossible to over-estimate the importance of the invention of scene-painting as the most decisive turning-point in the entire history of the art, and Agatharchos is named as the master who, at the inspiration of Æschylus, first devoted himself to practising the invention." This painter, it is said, also paid great attention to perspective, and left a treatise which was afterwards used in drawing up the laws of perspective. It is said his manner of treatment was "comparatively broad and picturesque." Next came Apollodoros, a figure-painter, who also combined landscape and figure subjects, and of whom Pliny says "that he was the first to give the appearance of reality to his pictures, the first to bring the brush into just repute, and even that before him no easel-picture (*tabula*) had existed by any master fit to charm the eye of the spectator." Apollodoros was the first to give his pictures a natural and definite background in true perspective; he was the first, it is emphatically stated, "who rightly managed chiaro-oscuro and the fusion of colours. . . . . He will have also been the first to soften off the outlines of his figures. . . . For this reason we may, with Brunn, in a certain sense call Apollodoros "the first true painter." We are told, however, that his "painting was, in comparison with his successors, hard and imperfect," and that the innovations made by him in the relation of foreground and background cannot be compared to the improvements effected by the brothers Van Eyck in modern times. We now read of Zeuxis, Parrhasios, and Timanthes, who, we are told, "perfected a system of pictorial representation, adequately rendering on the flat surface the relief and variety of nature, in other particulars if not in colour." The endeavour of Zeuxis was "by the brilliant use of the brush to rival nature herself," and from anecdotes related of him and of Parrhasios, we gather that they "laid the greatest stress on carrying out to the point of actual illusion the deceptive likeness to nature." Many of Zeuxis' subjects were taken from everyday life—another step in the right direction. We now come to the Dorian

Perspective.

Apollodoros.

Easel-pictures.

Chiaro-oscuro.

Brunn.

Zeuxis, Parrhasios, and Timanthes.

Eupompos.

school, with Eupompos as its founder; and here we find a determination to study painting scientifically, and to conscientiously observe nature, for we are told Eupompos expressed the opinion "that the artist who wished to succeed must go first of all to nature as his teacher."

Pamphilos.

Pamphilos, a pupil of Eupompos, brought this school to maturity, and insisted on the "necessity of scientific study for the painter."

Melanthios.

He was followed by Melanthios, who pursued the same lines of scientific investigation; and was

Pausias.

in his turn succeeded by Pausias, of whom we hear, "It is quoted as a novel and striking effect, that in one of his pictures the face of Methê (or personified Intoxication) was visible through the transparent substance of the glass out of which she drank." His work was considered to have great technical excellence, his subjects were taken from everyday life, and his pictures were all on a small scale. Pliny says "his favourite themes were 'boys,' that is, no doubt, scenes of child-life. . . . . He developed, it seems, a more natural method of representing the modelling of objects by the gradations of a single colour." We read, too, that his paintings drawn fresh from life "were much appreciated by the Romans." Such is the case with all good naturalistic works, they always interest posterity, whereas the so-called imaginative works only interest the age for which they are painted. We should to-day prefer and treasure as beyond price one of Pausias' studies of familiar Greek life, whereas the heroes of Polygnotos would lack interest for us, and excite but little enthusiasm.

The Theban-Attic school.

There was a third school of Greek painting, that called the Theban-Attic, and of this we read that there was "a great ease and versatility, and an invention more intent upon the expression of human emotion," but no painter of this school made any very great advance.

Apelles.

At length we come to Apelles, the most famous of all Greek painters. He, although already well known and highly thought of, went to the Sikyonian school, to study under Pamphilos, and we afterwards hear of him as court painter to Alexander the Great. We are told that at court his "mission was to celebrate the person and the deeds of the king, as well as those of his captains and chief men." This was

at any rate legitimate historical painting. Woltmann and Woermann say, "In faithful imitation of nature he was second to none; he was first of all in refinement of light and shade, and consequent fulness of relief and completeness of modelling." And again we read, "Astonishing technical perfection in the illusory imitation of nature" distinguished Apelles. Thus we see that the great aim of the greatest of Greek painters was to paint nature exactly as she is, or as glib critics would say, to paint "mere transcripts of nature." Contemporary with Apelles was Protogenes, whose aim was to reach the "highest degree of illusion in detail." The cycle of development seemed now to have reached its highest point, and as the naturalistic teachings fell into the hands of inferior men, they were abused, and Woltmann and Woermann tell us the imitative principle was not kept subservient to artistic ends, and in the hands of Theon of Samos the principle of illusion became an end in itself, and art degenerated into *legerdemain*. This same tendency is now showing its hydra head, and in London, Brussels, and other places are to be seen inferior works hidden in dark rooms, or to be viewed through peep-holes. We only want the trumpets of Theon or the music of the opera bouffe to complete the degradation. Following Theon, and probably disgusted with his phantasies, came painters of small subjects; the rhyparographi of Pliny, or the rag-and-tatter painters, "who painted barber's shops, asses, eatables, and such-like." "We see, therefore, that about B.C. 300 . . . Greek painting had already extended its achievements to almost all conceivable themes, with the single exception of landscape. Within the space of a hundred and fifty years the art had passed through every technical stage, from the tinted profile system of Polygnotos to the properly pictorial system of natural scenes, enclosed in natural backgrounds, and thence to the system of trick and artifice, which aimed at the realism of actual illusion by means beyond the legitimate scope of art."

Protogenes.

Theon.

The rhyparographi.

"The creative power of Greek painting was as good as exhausted by this series of efforts. In the following

centuries the art survived indeed as a pleasant after-growth, in some of its old seats, but few artists stand out with strong individuality from among their contemporaries. Only a master here and there makes a name for himself. The one of these whom we have here especially to notice is Timomachos, of Byzantium, an exception of undeniable importance, since even at this late period of Greek culture he won for himself a world-wide celebrity."

Timomachos.

Decadence, however, had already set in, and we find that Timomachos neglected the study of familiar subjects, and returned to the so-called imaginative style, producing such works as "Ajax and Medea," and "Iphigenia in Taurus." Curiously enough, it was during this period that the only branch of painting not yet tried by the Greeks, namely, landscape painting, was attempted. Woltmann and Woermann suggest a reason for this new departure when they say, "We can gather with certainty from poetry and literature that it was in the age of the Diadochi (the kings who divided amongst them the kingdom of Alexander) that the innate Greek instinct of anthropomorphism, of personifying nature in human forms, from a combination of causes was gradually modified in the direction of an appreciation of natural scenes for their own sake, and as they really are." Landscape painting, however, did not reach any great perfection, for we are told it "scarcely got beyond the superficial character of decorative work." With this period ends the true history of Greek painting, though it still lingers on, and becomes so far merged into that of Roman art that between the two it is not possible to draw a line of distinction. Roman art had a character of its own, and even two painters, whose names, Fabius and Ludius, and in the case of the latter whose works, have been handed down to us; but the works of Ludius do not appear to have been more than decorative work.

Greek landscape painting.

Decadence.

Fabius and Ludius.

Besides the written testimony referred to, the state of art can be gathered from the vases, bronzes, mosaics, paintings on stone, and mural decorations which have come down to us. These were chiefly the work of Greek journeymen, and though there is much that is excellent

Vases, mosaics, &c., &c.

in these productions, their period of decadence very soon set in. It is a gauge of the art knowledge of to-day to watch the gullible English and Americans purchasing third-rate copies of the works of Greek journeymen house-decorators, and taking them home and hanging them up as works of art,—works which were only valuable in their own time, in connection with the life and architecture then existing, but which at the present day are interesting merely from an historical point of view, for no really artistic mind can possibly find satisfaction in such work for its own sake. Did these uncultured buyers but reflect and study for a while the natural beauties around them, they would soon see the error of their ways.

Antiques for tourists.

In their conclusion on Græco-Roman art Woltmann and Woermann say that they "have no doubt that Greek painting had at last fully acquired the power to produce adequate semblances of living fact and nature," which could not be said of any painting up to that time. Here then we have traced a quick development of Greek painting, and an almost equally quick decline, and all through we find the never-failing truth,—that as long as nature was the standard, and all efforts were directed towards interpreting her faithfully, so long did the national art grow and improve till it culminated in the statues of Pheidias and the paintings of Apelles; but that directly nature was neglected, as it was in the time of Theon, art degenerated, till at last it fell, as we shall see, into the meaningless work of the early Christian artists. We find even thus early that the pedantic writer who knows nothing of practical art had begun to fill the world with his mysterious nonsense. Such were the rhetoricians of the empire who describe works "purely anonymous, indeed in many cases it is clear that the picture has been invented by the man of letters, as a peg whereon to hang his eloquence."

Art criticism.

Rhetoricians.

It cannot be too often repeated that artistic criticism is not authoritative unless made by masters of the several arts.

Let us now proceed to the British Museum, and look at the best specimens of Greek and Græco-Roman sculpture as exhibited there.

Greek and Græco-Roman sculpture.

The British Museum collection.

Nero's bust.

Trajan's bust.

Bust of Publius Pertinax.

Busts of Cordianus and Caracalla.

Taking for examination the specimens nearest at hand; we refer to those to be seen in the gallery leading out of the entrance-hall of the British Museum. The busts which strike us most forcibly are those of Nero, Trajan, Publius Hevius Pertinax, Cordianus Africanus, Caracalla, Commodus, and Julius Cæsar. The bust of Nero (No. 11) strikes one by the simplicity and breadth of its treatment, combined as these qualities are with the expression of great strength and energy. The sculptor has evidently gone at his work with a thorough knowledge of the technique, and hewn the statue straight from the marble, a custom, by the way, followed by only one modern sculptor, namely, J. Havard Thomas. Look at the broad treatment of the chin and neck of this bust of Nero. Nowadays one rarely meets with even living awe-inspiring men, but that marble carries with it such force, that, all cold and stony as it is, it creates in you a feeling of respect and awe. It should be studied from various distances and coigns of vantage, and if well studied it can surely never be forgotten. It gives the head of a domineering, cruel, sensual, yet strong man. In the bust of Trajan (No. 15), we have the same powerful technique employed this time in rendering the animal strength of a powerful man. With his low forehead, small head, and splendid neck, the embodiment of strength, Trajan looks down on us somewhat scornfully. Then, too, No. 35, the bust of Publius Hevius Pertinax, is no mask, but a face with a *brain behind it.* You feel this man might speak, and if he did, what he had to say would be worth listening to. Perhaps for grip of the impression of life this is the best of all these busts. Compare it with the mask (it can be called nothing else) on the shelf above it, and you will see the difference. The portrait busts of Cordianus Africanus (No. 39) and Caracalla are also marvellous for life-like expression. Look well at the cropped head and beard of Cordianus from a little distance, and see how true and life-like the *impression* is; then go up close and see how the hair of the beard is rendered. It is done by chipping out little wedges of the marble. Here is a very good example of the distinction between what is called

realism and *naturalism* or *impressionism*, for these two we hold to be synonymous, though for lucidity we have defined them differently. If all the detail of that beard had been rendered, every hair or curl correctly cut to represent a hair or curl, and this is what the modern Italian sculptor would have done, we should have had realism and bad work. This should be borne in mind in portrait photography, that the essence, the true impression, is what is required; the fundamental is all that counts; the rest is small, niggling, contemptible.

Bust of Commodus.

Let us turn to No. 33,—the sensual face of Commodus, —he re-lives in the marble. Another very notable bust is that of Homer (No. 117), in the corner of the gallery at right angles to that we are leaving. Look how truly the impression is rendered of the withered old literary man; how the story of his long life is stamped on his face, the unmistakable look of the studious, contemplative man.

Bust of Homer.

Pass we now to the next gallery, and stop at the wonderfully fine torso, No. 172. Look well at this beautiful work, so feelingly, sympathetically, and simply treated by the sculptor. You can almost see the light glance as the muscles glide beneath the skin. This is a marvellous natural work, as is also the boy pulling out a thorn from his foot. The young satyr (No. 184) is also a wonderfully fine piece of sculpture, and well worth close study. The student will have ample opportunity for studying, side by side, in this gallery, bad stone cutting and fine sculpture, for many of the fine marbles have been barbarously restored. As an example, we cite the lifeless, stony arms of No. 188, which compare with the rest of the figure, look at the india-rubber finger of the right hand, and you will understand what bad work is, if you did not know it already. Before leaving this gallery let the reader look at No. 159, the Apotheosis of Homer. Now, as can be imagined, this is the delight of the pedantic critic, and more ignorant rhapsodies have been written on this work than perhaps on any other piece of sculpture. Of course, as any candid and competent observer will see, this is, as a work of art, very poor, and hardly worth talking about, except as a warning. In passing into the gallery

Torso, and boy and thorn.

Young satyr.

Apotheosis of Homer.

where are the remains of the Parthenon frieze, notice an archaic nude torso which stands on the left, and see how the artist was feeling his way to nature. All portions of the Parthenon frieze should be most carefully studied. The animals in 60 and 61 are wonderfully true, as in fact is the whole work. It was on seeing one of Muybridge's photographs of a man cantering on a bare-backed horse, that a sculptor remarked to us, "I wonder if the Greeks knew of photography." And yet critics and feeble artists call this work ideal, and declare they discover imaginary groupings according to geometrical laws, and heaven knows what; all of which the best sculptors deny. The student must now look at "Horse of Selene," one of the most marvellous pieces of work ever done by man. It was a long time before we could see the full beauty and truthfulness of impression of this great work, and the reason was due to a simple physical fact. We stood too near to it. To see it well you should stand about twenty or thirty feet off, and out of the grey background you will see the marble horse tossing its living head, and you will be spell-bound. Having observed the truthfulness of impression, go close, and note the wonderful truth with which the bony structure of the skull is suggested beneath the skin. We can say no more than that it is a true impression taken direct from nature, for in no other way could it have been obtained. Nothing ideal about it at all, simply naturalism.

Parthenon frieze.

Muybridge and his cantering horse.

Horse of Selene.

Much nonsense has been written, too, about "idealism" in Greek coins. To us they seem simply impressions taken from busts or other works; but to make assurance doubly sure, we have taken the opinion of two of the very best modern sculptors, who are, we venture to prophesy, going to show us as good work as any done by the Greeks, and in many ways even better work. Well, their opinion as to "idealism" in Greek sculpture is emphatically that it existed not. They say that the Greeks were naturalistic, the study of nature was the mainspring of their art, and the truthful expression of the poetry of nature their sole end and aim. That they attained this end in many ways we

Greek coins.

know, and as far as they went they will never be surpassed.

We do not attempt to give a detailed technical criticism of sculpture as executed by the Greeks, for, as we have said before, none but a *first-rate sculptor* can do that; and as there are only about half a dozen such in England, and as they have quite enough work to do at present, we fear the public will have to wait some time for such criticism. In the meantime those interested in the subject cannot do better than study the works mentioned, and let them leave all others alone; let them spend days in studying those pointed out, and they will soon find themselves able to distinguish good work from bad. Then, if they want a good shock, let them walk into the Gibson Gallery at Burlington House, for there they will see *nothing* but bad work.

Technical criticism.

Gibson gallery.

There is one point to be borne in mind when we look at the surpassing beauty of the Greek statues, and that is the natural beauty of the Greek race, and the number of excellent models the Greek sculptors had before them to choose from. Taine, in his charming but atechnical volume on "La Philosophie de l'art Grec," goes as thoroughly into this question as a historian and philosopher can enter into the life of the past, and into art questions, which in our opinion is to a very limited extent. Nevertheless, his book is full of suggestions, and if our sculptors do not to-day equal in beauty the antiques, the cause, in our opinion, lies in the lack of perfect models, for the best technical work of to-day we think is superior to that of the Greeks. We have seen impressionistic renderings of nature by some modern sculptors which we think more natural in *all points* than anything of the kind to be found in Greek sculpture.

Taine.

Like the Greeks have the leading men of the modern French school adhered to nature,—a school in our mind more akin to the Greek school at its best than any other, and for the simple reason that it is more loyal to nature than any art has been since the time of Apelles. As an example of the kinship between the two schools we quote Woltmann and Woermann, who tell us the Greeks "placed

Modern French school.

Horizon-line.

their horizon abnormally high according to our ideas; and distributed the various objects over an ample space in clear and equable light." Now modern painters have happily discarded all laws for the position of the horizon-line, and common sense shows that the height of the horizon naturally depends on how much foreground is included in the picture. The angle included by the eye vertically as well as horizontally varies with the distance of the object from us, and the only law therefore is to include in the picture as much as is included by the eye; and this of course varies with the position of the picture or chief point of interest. Millet has a good many high horizons, and we feel they are normal not abnormal. On this point therefore we think the Greeks were very advanced.

Millet.

Early Christian Art.

Early Christian art.

Leaving Greek art, we now come to the art of the early Christians. Woltmann and Woermann tell us that "Early Christian art does not differ in its beginnings from the art of antiquity. . . . The onlyp erceptible differences are those differences of subject which betoken the fact that art has now to embody a changed order of religious ideas, and even from this point of view the classical connection is but gradually, and at first imperfectly, severed. . . . At the outset Christianity, as was inevitable from its Jewish origin, had no need for art. In many quarters the aversion to works of material imagery . . .—the antagonism to the idolatries of antiquity —remained long unabated. Yet when Christianity, far outstepping the narrow circle of Judaism, had been taken up by classically educated Greeks and Romans, the prejudice against works of art could not continue to be general, nor could Christendom escape the craving for art which is common to civilized mankind. The dislike of images used as objects of worship did not include mere chamber decorations, and while independent sculpture found no footing in the Christian world, or at least was applied only to secular and not to religious uses, painting, on the other hand, found encouragement for purely decorative

purposes, in the execution of which a characteristically Christian element began to assert itself by degrees."

The pure Christian element began to assert itself silently in decorative work in the catacombs, and "these cemeteries are the only places in which we find remains of Christian paintings of earlier date than the close of the fourth century." These works, however, "constituted no more than a kind of picture writing," as any one who has seen them can certify. But this symbolism got very mixed with pagan stories, and we get Orpheus in a Phrygian cap, and Hermes carrying a ram, both representing the Good Shepherd. At other times the artists seem to have set themselves to represent a Christ constructed on their knowledge of the attributes ascribed to Him, and we get a beardless youth approaching "closely to the kindred types of the classical gods and heroes." "Mary appears as a Roman matron, generally praying with uplifted hands." Peter and Paul "appear as ancient philosophers," and the well-known bronze statue of St. Peter, in the cathedral dedicated to him at Rome, is no less than a *bonâ fide* antique statue of a Roman consul. Here we have the same neglect of nature, and the bad work always to be expected from this neglect and from enslaved minds.

The catacombs.

St. Peter's statue at Rome.

The mosaics of Christian art were also handed down from classical antiquity. Though rarely found in the catacombs, this art was being much used above ground for architectural decoration. This art, as Woltmann and Woermann rightly say, was "only a laborious industry, which by fitting together minute coloured blocks produces a copy of a design, which design the workers are bound by. They may proceed mechanically, but not so flimsily and carelessly as the decorative painters." From about A.D. 450 we are told that church pictures become no longer only decorative, but also instructive. Here then was a wrong use of pictorial art—it is not meant to be symbolic and allegorical, or to teach, but to interpret the poetry of nature.

Mosaics.

A new conception of Christ it seems now appeared in the mosaics,—a bearded type,—and this time we get the

features of Zeus represented. By means of the mosaics a new impulse was given to art, and in A.D. 375 a school was founded by the Emperors Valentinian, Valens, and Gratian, of which we read, "The schools of art now once more encourage the observance of traditions; strictness of discipline and academical training were the objects kept in view; and the student was taught to work, not independently by study from nature, but according to the precedent of the best classical models."

The emperors' school.

Byzantine art.

At this time art, though lying under the influence of antique traditions, held its own for a longer time in Byzantium, where the decorative style of the early Christians lived on after the iconoclastic schism in the eighth century, and where we read that this ornamental style began to be commonly employed. After the age of Justinian (which itself has left no creation of art at Rome), many poor and conventional works were executed at Ravenna. We read that for "lack of inner life and significance, amends are attempted to be made by material splendour, brilliancy of costume, and a gold groundwork, which had now become the rule here as well as in Byzantium." Thus we see the artists became completely lost in confusion since they had left nature, and they knew not what to do, but, like many weak painters of the present day, tried to make their work attractive by meretricious ornaments, and true art there was none. This is carried out to-day to its fullest development by many men of medium talent, who make pictures in far countries, or of popular resorts, or religious subjects, and strive to appeal, and do appeal to an uneducated class, through the *subject* of their work, which in itself may be a work of the poorest description.

Justinian.

Mosaics.

Miniatures.

Mohammedans.

We read that in the year 640, "the superficial and unequal character of mosaic workmanship increased quickly." The miniatures of the early Christians, however, we are told, showed considerable power, but the iconoclastic schism brought all this to an end. "The gibes of the Mohammedans" were the cause of Leo the Third's edict against image worship in A.D. 726. All the pictures in the East were destroyed by armed bands, and the

painters thrown into prison, and so ended Byzantine art. This movement did not affect Italian art.

Mediæval Art.

We have followed Messrs. Woltmann and Woermann closely in their account of the decadence of art from the greatest days of Greek sculpture and painting to the end of the Christian period; but as our object is avowedly only to deal with the best art—that which is good for all time—and to see how far that is naturalistic or otherwise, we shall speak but briefly of (the main points connected with) mediæval art, which has but little interest for us until we come to Niccolo Pisano, and Giotto. During the early years of what are called the Middle Ages, miniaturists were evolving monstrosities from their own inner consciousness, but with Charlemagne, who said, "We neither destroy pictures nor pray to them," the standard adopted was again classical antiquity. So art continuously declined until it became a slave to the Church, and the worst phase of this slavery was to be seen in the East, under Ivan the Terrible, for we read that "artists were under the strictest tutelage to the clergy, who chose the subjects to be painted, prescribed the manner of the treatment, watched over the morality of the painters, and had it in their power to give and refuse commissions. Bishops alone could promote a pupil to be a master, and it was their duty to see that the work was done according to ancient models." Here was indeed a pretty state of things, a painter to be watched by a priest; to have his subjects selected for him! One cannot imagine anything more certain to degrade art. Religion has ever been on the side of mental retrogression, has ever been the first and most pertinacious foe to intellectual progress, but perhaps to nothing has she been so harmful as to art, unless it has been to science.

Mediæval.

Miniaturists.

Charlemagne.

Ivan the Terrible.

During the period of this slavery, the Church used art as a tool, as a disseminator of her tenets, as a means of imparting religious knowledge. Very clever of her, but very disastrous for poor art.

Glass paintings.

How conventional art was during the Romanesque period can be seen in the glass paintings that decorate many of the old churches, to admire which crowds go to Italy and waste their short time in the unhealthy interiors of churches, instead of spending it at Sorrento or Capri. These go back to their own country, oppressed with dim recollections of blue and red dresses, crude green landscapes, and with parrot-like talks of "subdued lights," "rich tones mellowed by time," and such cant.

Gothic.

The Romanesque style of architecture was superseded in the fourth century by the Gothic. A transformation took place in art and France now took the lead. The painters of this period emancipated themselves from the direction of the priesthood—a great step indeed. The masters of this age were specialists; the guilds now ruled supreme in art matters. We read that "now popular sentiment began to acknowledge that the artist's own mode of conceiving a subject had a certain claim, side by side with tradition and sacerdotal prescription. . . . They took their impressions direct from nature," but their insight into nature was scanty. As Messrs. Woltmann and Woermann very truly remark, "If for the purpose of depicting human beings, either separately or in determined groups and scenes, the artist wishes to develop a language for the expression of emotion, there is only one means open to him—a closer grasp and observation of nature. In the age which we are now approaching, the painter's knowledge of nature remains but scanty. He does not succeed in fathoming and mastering her aspects; but his eyes are open to them so far as is demanded by the expressional phenomena which it is his great motive to represent; since it is not yet for their own sakes, but only for the sake of giving expression to a particular range of sentiments that he seeks to imitate the realities of the world."

The guilds.

There was a struggle at this period for the study of nature, and the tyranny of the Church was being thrown off; there was then hope that art would at last advance, and advance it did. What was wanting was a deeper insight into nature, for nature is not a book to be

read at a glance, she requires constant study, and will not reveal all her beauties without much wooing. And though we read of a sketch-book of this time, the thirteenth century, in which appears a sketch of a lion, which "looks extremely heraldic," and to which the artist has appended the remark, "N.B.—Drawn from life," this in no way surprises us, for have we not been seriously told in this nineteenth century by the painters of catchy, meretricious water-colours, with reds, blues and greens such as would delight a child, that they had painted them from nature; pictures in which no two tones were correct, in which detail, called by the ignorant, finish, had been painfully elaborated, whilst the broad facts of nature had been ignored. Such work is generally painted from memory or photographs. Happily work of this kind will never live, however much the gullible public may buy it. Next we read that "the germs of realism already existing in art by degrees unfold themselves further, and artists venture upon a closer grip of nature." Here, then, were the signs of coming success, and the great effect of these gradual changes was first manifested in the work of Niccola Pisano, who "made a sudden and powerful return to the example of the antique." All honour to this man, who was an epoch-maker, who based his conception "upon a sudden and powerful return to the example of the antique, of the Roman relief." His work is by no means naturalistic or perfect, but it was enough for one man to do such a herculean task as to ignore his own times and rise superior to them. Painting, however, took no such quick turn, but Cimabue was the first of those who were to bring it into the right way. The principal works ascribed to him, however, are not authenticated.

Thirteenth century sketch-book.

Niccola Pisano.

Cimabue.

Another epoch-maker, Giotto, now appears. He seems to have been a remarkable man in himself, which however hardly concerns us. The historian of his works says, "The bodies still show a want of independent study of nature; the proportions of the several members (as we know by the handbook of Cemieno hereafter to be mentioned) were regulated by a fixed system of measurement;"

Giotto.

again, "The drawing is still on the whole conventional, and the modelling not carried far." His trees and animals are like toys. Yet we read that "their naturalism is the very point which the contemporaries of Giotto extol in his creations," but, as Woltmann and Woermann say, this must be accepted according to the notion entertained of what nature was, and we are by this means able to see how crude the notions of nature can become in educated men when they neglect the study of it. But from all this evidence we gather that Giotto's intellect was great, and that his strides towards the truthful suggesting of nature were enormous. His attempts too at expression are wonderful for his age, see his "Presentations," the figures are almost *natural* notwithstanding their crude drawing; he got some of the charm and life of the bambinos around him. We read that in some of his pictures, he took his models direct from nature, as also did Dante in his poetry, but like Dante he attempted at times the doctrinal in his pictures, as in the "Marriage of St. Francis and Poverty," he tried in fact what many moderns are still trying to do, and daily fail to do, namely, to teach by means of their pictures—a fatal error. Doctrinal subjects are unsuitable for pictorial art, and will never live. Who cares now for Giotto's "Marriage of St. Francis and Poverty"? but who would *not* care for a landscape or figure subject taken by Giotto from the life and landscape of his own times?—it would be priceless. Owing to circumstances, we hear that he had to put "much of his art at the service of the Franciscans," and though not a slave to them, yet we read this disgusted him with the monkish temper. In 1337 Giotto died, but he had done much. Without Kepler there might have been no Newton, so without Giotto there might have been no Velasquez.

The guilds. Artists at this time belonged to one of the seven higher of the twenty-one guilds into which Florentine craftsmen were divided, namely, that of the surgeons and apothecaries (medici and speziali). Here art and science were enrolled in the same guild, and so were connected, as they always will be, for the study of nature is at the

foundation of both, the very first principle of both. Together they have been enslaved, persecuted, and their progress hampered; together they have endured; and now to-day together they stand out glorious in their achievements, free to study, free to do. The one is lending a hand to the other, and the other returns the help with graceful affection. Superstition, priestcraft, tyranny, all their old persecutors are daily losing power, and will finally perish, as do all falsehoods.

Summary. We thus leave the art of the Middle Ages, as we left the catacombs, with a wish never to see any more of it. One feels the deepest sympathy for great intellects like Giotto, and his greatest followers, whose lots were cast in times of darkness, and we cannot but respect such as struggled with this darkness, and fought to gain the road to nature's fountains of truth and beauty. But at the same time, though we may in these pictures see a graceful pose here, a good expression there, or a beautiful and true bit of colour or quality elsewhere, yet we cannot get away from the subject-matter of many of the pictures, which, allegorical and doctrinal as they are, do not lie within the scope of art, and above all one cannot in any way get rid of the false sentiment and untruthfulness of the whole work. Such works will always be interesting to the historian and to the student of art, but beyond that, to us they are valueless, and we would far rather possess a drawing by Millet than a masterpiece by Giotto.

When abroad, and being actually persuaded of their great littleness, we have been moved with pity for the victims we have met, victims of the pedant and the guide-book, who are led by the nose, and stand gaping before middle-age monstrosities, whilst some incompetent pretender pours into their ears endless cant of grace, spirituality, emotion, mellifluous line, idealism, *et id genus omne*, until, bewildered and sick at heart, they return home to retail their lesson diluted, and to swell the number of those who pay homage at the shrine of pedantry and mysticism. Had these travellers spent their short and valuable time in the fields of Italy, they would have "learnt more art," whatever they may mean by that term of theirs,

than they ever did in the dreary Campo Santo or dark interior of Santa Croce or Santa Maria Novella. Alas! that the painters of the Middle Ages were unable to paint well. Had they been able to paint, as can some of the moderns, and had they painted truthfully the life and landscape around them, there is no distance some of us would not go to see a gallery full of their works, works showing men and women as they were, and as they lived, and in their own surroundings. There at once would have been the pictures, the history, and the idyllic poetry of a bygone age; and what have we now in their place? diluted types of repulsive asceticism, sentimental types of ignorance and credulity, pictures hideous and untrue, and painful to gaze upon, lies and libels on our beautiful world, and on our own race. And whom have we to thank for this? Religion—the so-called encourager of truth, charity, and all that is beautiful and good.

Eastern Art.

Mohammedan Art.

Before beginning the renascence we must glance through Mohammedan, Chinese, and Japanese art. With Mohammedan art we have little to do, as it was entirely decorative. It is seen at its best in the Alhambra, and was not the outcome of any study of nature. The Arabian mind seems to have been unable to rise beyond a conventional geometrical picture-writing. Such minds are seen to-day in all countries amongst the undeveloped. Quite recently we have seen some of the best modern negro work from the West Coast of Africa; there too was the love of geometrical ornamentation as strong as in the Arabian art. We repeat, this artistically-speaking low standard of development is often seen among the people of to-day, and though highly educated in all else, in art they are uneducated; and the mischief is, that they judge pictures by their decorative standard; they look for bright colours placed in Persian-rug juxtaposition, and talk of "glorious colouring." It never seems to occur to them what art really is, and what the artist has tried to express, and how well he has expressed it; and

Art amongst the Philistines.

they never refer their "glorious colouring" to the infallible standard—nature; but seem to imagine there are abstract standards of colour and form. "Glorious colourings" are oftener than not meretricious lies dressed out in gaudiest, vulgarest apparel, and when compared with nature these "colourings" will be found veritable strumpets. Look carefully at many of the much-vaunted water-colours, and then carefully study the same scene in nature, and if many of those water-colours please you afterwards—well, in matters artistic, you have the taste of a frugivorous ape. But apply this test to the water-colours of Israels or Mauve, and you will see they interpret nature. But they have painted chiefly in oils, and wisely so, as there is more to be expressed by oil-painting, and we know of few, if any, great men who confine themselves to water-colour as a medium. But it serves the turn of a host of men—painters, but not artists, who, with their pretty paints, make pot-boilers, of which the form and idea is often stolen—stolen, perhaps, from a photograph. Do such ever study nature? No. They sit at home, and coin vulgar counterfeits with no more of nature in them than the perpetrators have of honesty. It is time that it was clearly and distinctly understood that the man who copies a photograph is as despicable as the man who copies a painting, and it is very certain neither will ever be respected by his contemporaries, or remembered by his successors. Yet the "cheap" work of these men sells well, and the gulled public talk glibly over them of "strength" and "tone" and "colouring," and what not. Nature is so subtle and astonishing in her facts that but few even of those who do paint directly from her can come anywhere near her, whereas, those who do not study her at all, who do not paint *coram ipse*, fake and fake, and by faking they lie, and set the example to others to lie, and, if not fought against, this sort of thing would speedily take us back to the art of the Middle Ages, when we should be under the tyranny of Crœsus, instead of Clericus.

Water-colours.

It is, then, the absolute duty of every picture-buyer,

Picture-buyers.

who has any regard for truth, and any interest in the future of art, to learn to study nature carefully, and to buy only that which is true and sincere, and let the pink and white school of dishonesty die of inanition.

In short, it is high time that educated people ceased to judge painting as they often do, by the standard of coloured rugs. This talk of "colour" is one of the stumbling-blocks of the weak-kneed in art. Colour is good so long as it is true, and no longer. A Persian rug, or Turkey carpet, is not the standard of colour whereby to judge pictures, and only those in the mental state of the frugivorous ape or the Arab craftsmen can think so.

Chinese and Japanese Art.

China and Japan. First period.

In China and Japan things were very different. Following Mr. Anderson's invaluable work, the "Pictorial Arts of Japan," we find that their history of pictorial art begins about A.D. 457. Mr. Anderson thinks, however, that art was only actually planted in Japan with the introduction of Buddhism in the sixth century. Then it begins badly, for it was under the influence of religion, and in fact we read that the earliest art consisted of Buddhist images and mural decorations. This religious influence, together with a servile imitation of the Chinese masters, so enslaved art, that no development of importance took place till the end of the ninth century.

Buddhism.

The "Ni Ō."

Looking at the plate of the "Ni Ō,"—a wooden statue—considered the greatest work of the time, we can see the artist had really struggled to interpret nature, and no doubt studies were made from the nude, for the work on the anatomy could not otherwise have been so well expressed; but, good as it is, it runs in the Michael Angelo spirit, is exaggerated, and lacks entirely all the greatness of the Greek sculpture. This work—the greatest of what Mr. Anderson has called the first period—shows that there had been a struggle towards the expression of nature.

Second period.

The second period, we learn, ends with the fourteenth century, and is parallel, therefore, with the European

mediæval period. On comparing plates of the Japanese work with that of the same period in Europe, we are forced to give the palm to the Japanese artists, they were, in fact, vastly superior. In looking at the plate of "The Death of Kosé No Hirotaka" we cannot but feel there was much more respect for nature in Japan than there was in Europe at that time, notwithstanding the fact that Buddhism bore the same relation to art in Japan as Christianity did in Europe. We read also that in the twelfth century there was one, Nobuzané, who had a brilliant reputation for "portraits and other studies from Nature." The specimen of Nobuzané's work is admirable in expression, he has caught the living expression of his model, but the rest is conventional. We are told that the Chinese renascence began about 1275, and that the painters of this movement were naturalistic, "Ink sketches of birds and bamboos, portraits and landscapes were the subjects chosen," and though these were only a kind of picture-writing, yet the movement led the artists more and more to study nature.

Nobuzané.

Chinese renascence.

Coming now to Mr. Anderson's third period, from the end of the fourteenth century to the last quarter of the eighteenth, we find that Meichō seems to have been to Japanese art what Giotto was to European art, and at about the same period. We read further on that in the early part of the fifteenth century the revived Chinese movement referred to made its influence felt in Japan. An example given by Mr. Anderson of Shiūbun's idealized landscape painting, while far from satisfactory or even pleasing, is, we venture to think, superior to the work of Giotto. Therein is shown some power, and there is not the childishness which is visible in Giotto's work. Much more realistic, powerful, and pleasing are the works of Soga Jasoku, fifteenth-century Chinese school. These landscapes show the artist had a feeling for nature, and although he attempted in the upper plate (Plate 16) what we consider to be beyond the scope of art, yet in the lower the master-hand shows itself. There is atmosphere in the picture. Close observation of nature re-

Third period.

Meichō.

Shiūbun.

Soga Jasoku.

sulted in a grasp of subtlest movement and expression.

Soga Chokuan.

Witness the "Falcon and Egret" by Soga Chokuan (sixteenth century), where the power shown in depicting the grasp of the falcon's talon as it mercilessly crushes the helpless egret, is very great. Then look at the paintings of birds in any of our books, and see how wooden, how lifeless they are, compared with even the sixteenth-century Japanese representations of bird life.

Sesshiū.

Sesshiū, we are told, was another great painter, and the founder of a school (1420—1509). This great man, we are told, "did not follow in the footsteps of the ancients, but developed a style peculiar to himself. His power was greatest in landscape, after which he excelled most in figures, then in flowers and birds," and later on, we are told, in animals. He preferred working in monochrome, and it is said asserted "the scenery of nature was his final teacher."

Kano school.

Then came the Kano School, all of whose artists evidently struggled for Naturalism, and had great power of expression of movement but not of form. The leader, we are told, was an eclectic, and painted Chinese landscapes in Japan, so that he must have neglected nature, and his works belong to the so-called imaginative or unnatural school. The best men of this period were decidedly impressionists, and their chief aim seems to have been to give the impression of the scene and neglect the details, and it is perfectly marvellous how well they succeeded in depicting movement by a very few lines. The "Rain Scene" by Kano Tanyu is a fine example of this.

We read that the seventeenth and eighteenth centuries were periods of decadence; we conclude therefore that in Japan art reached its highest state during the second period, under Shiūbun, Soga Jasoku, Sesshiū and Tanyu, who were all students of nature, and several of whom would have been called impressionists had they painted in these days.

Matahei.

We are told that Matahei tried to found a naturalistic school, whose followers should go direct to nature for their subjects, but the movement did not receive any hearty impulse. However it was taken up afterwards by

a series of book-illustrators. Next we read of Kôrin whose "works demonstrate remarkable boldness of invention, associated with great delicacy of colouring, and often . . . . masterly drawing and composition." It is quite marvellous to see the work of this seventeenth-century artist. Kôrin.

Winding up his account of the third period, Mr. Anderson says, "But three-quarters of the eighteenth century were allowed to pass without a struggle on the part of the older schools to elevate the standard of their art, and painting was beginning to languish into inanition when the revolutionary doctrines of a naturalistic school and of a few artisan book-illustrators brought new aims and new workers to inaugurate the last and most characteristic period of Japanese art."

Mr. Anderson says, "The fourth and last era began about thirty years before the close of the last century, with the rise of the Shijo naturalistic school of painting in Kioto, and a wider development of the artisan popular school in Yedo and Osaka, two steps which conferred upon Japanese art the strongest of those national characteristics that have now completed its separation from the parent art of Amia." Fourth period. Shijo school.

He goes on to say "that the study of nature was admitted to be the best means of achieving the highest result in art by the older painters of China and Japan, but they limited its interpretation."

We are told that Maruyama Ōkio was the first painter who seriously endeavoured to establish naturalistic art (1733—1795). He preached radical ideas in art at Kioto, the centre of Japanese conservatism, and gathered a school around him. In summing up this school, Mr. Anderson remarks, "The chief characteristics of the Shijo school are a graceful flowing outline, freed from the arbitrary mannerisms of touch indulged in by many of the older masters; comparative, sometimes almost absolute, correctness in the interpretation of the forms of animal life; and lastly, a light colouring, suggestive of the prevailing tones of the objects depicted, and full of delicate harmonies and gradations." Their natural- Ōkio

istic principles do not, however, seem to have fully developed, and their works show ignorance of the scientific facts of nature. Yet the work has a *verve* which renders it very fascinating.

Hokusai.

One great man, Hokusai, appears as the last of the race purely Japanese and uninfluenced by European ideas, as all the Japanese artists are now.

So we find that through various phases the Japanese developed to impressionistic landscape-painting, and no doubt when they have got more scientific knowledge, they will make for themselves, by their wonderful originality and patience, a position in art which will astound Europe.

Japanese art at the British Museum.

Since writing this section, a collection of Japanese and Chinese art has been opened at the British Museum, which the student must by all means study, for there he will see works of most of the masters cited in these notes. In connection with this subject our readers may have seen the very interesting report on Art by the Japanese Commission that visited the galleries and schools of Europe; wherein the conclusion of the commission on the best European art is very interesting,—Millet being the greatest painter to their mind. They think, too, that Japan will soon be able to show the world something better than anything yet accomplished.

The Japanese Commission.

Japanese art.

We feel, however, that wonderful as Japanese art has been, yet there is a great gulf between it and the best Greek and modern art. To us Japanese art is the product of a semi-civilized race, a race in which there is strong sympathy with nature, but a very superficial acquaintance with her marvellous workings. In short, we feel the Japanese need a deeper and more scientific knowledge of nature, and that their work falls far short of the best European work. At the present day there is a craze for anything Japanese, but like all crazes it will end in bringing ridicule upon Japanese work; for their work, though fine for an uncivilized nation, is absurd in many points, and this stupid craze will only kill the qualities to be really admired by indiscriminate praise.

Chinese art.

The earliest authentic records of Chinese painting date

about A.D. 251. The earliest painters were painters of Buddhist pictures. Mr. Anderson mentions as one of the best known of the early masters, one Wu-Tao-Tsz', whose animals were remarkable. He thinks that the art of China of to-day is feeble compared with that which flourished 1100 years ago. We are informed too that the "artistic appreciation of natural scenery existed in China many centuries before landscapes played a higher part in the European picture than that of an accessory," and judging from the specimens he gives in his book of the work of the Sung Dynasty (960—1279 A.D.), the Chinese artists had a great feeling for landscape. We are told that the painters of the thirteenth century "studied nature from the aspect of the impressionist," and their subjects were all taken from nature, landscape especially delighting them. In the fifteenth century we read "decadence began by their neglect of nature and their cultivation of decorative colouring, calligraphic dexterity, and a compensating disregard for naturalistic canons." We are told, and can readily believe it, that in painting of bird life they were unequalled save by the Japanese, and that down to 1279 the Chinese were at the head of the world in painting, and their only rivals were their pupils, the Japanese. Korean art seems also to have degenerated since the sixteenth century.

Wu-Tao-Tsz'.

Thus we ever find the same old story. China, when she painted from nature, was unequalled by any nation in the world; when she neglected nature, as she does now, she fell to the lowest rank.

The Renascence.

This is a period of a return to the study of nature, of a carrying out of the feelings which seemed to be developing even in Giotto's time. No longer now was the artist to be separated from nature by the intervention of the Church, and though natural science was not advancing as fast as art was, still a growing regard for nature was the order of the day. This feeling first showed itself strongly in the Netherlands, with the brothers Van Eyck. We

Renascence.

The Van Eycks.

are told that the Van Eycks "mixed the colours with the medium on the palette and worked them together on the picture itself, thus obtaining more brilliant effects of light as well as more delicate gradations of tone, with an infinitely nearer approach to the truth of nature."

The Van Eycks regarded nature lovingly, and tried truthfully to represent her, and though many of their works were of sacred subjects, yet they were evidently studied from nature with loving conscientiousness; and so successful were they that to this day the picture by one of the brothers (a portrait of a merchant and his wife), in the National Gallery, remains almost unsurpassed. It is well worth a journey to the National Gallery on purpose to see it, and we trust all those who do not already know the picture will take the trouble to go and study it well. It is wonderful in technical perfection, in sentiment, in truthfulness of impression. Note the reflection of the orange in the mirror, with what skill it is painted. In fact the whole is full of life and beauty,—the beauty of naturalism. It is a master-piece good for all time, and yet it is but the portrait of a merchant and his wife. No religious subject here inspired John Van Eyck, but a mere merchant family, yet in many ways the picture remains, and will remain, unsurpassed. Such powerful minds as the brothers Van Eyck of course influenced all art, and they had many followers; but it does not seem that these followers had the insight into nature that characterized the Van Eycks, and the work falls off after the death of the brothers, whose names represent, and ably represent, all that was best of the fifteenth century.

Portrait of a merchant and his wife.

Quinten. Massys.

In the sixteenth century Quinten Massys was the greatest and most naturalistic painter. He was said to be the "originator of a peculiar class of *genre* pictures, being in fact life-like studies from the citizen life of Antwerp." Here was an honourable departure from conventionality. His followers, however, having no mind to see *how* he was so great, were led away from the study of nature, and where are they now? Their names we all

know, but who cares to see their works ? Massys, the greatest painter of this period in the Netherlands, was content to take his subjects from the life of his own times, as all great men have been, from the Egyptians downwards.

Germany.

Turning now to Germany, we shall see what the best men there thought of naturalism. The movement towards the study of nature seems to have begun in the methods of engraving as practised by the goldsmiths, who were trained artists. The earliest plates we find are of subjects illustrating the life of the times, a hopeful augury for Germany, which was fulfilled by the work of the master, Albert Durer. We are told he had "unlimited reverence for nature, which made him one of the most realistic painters that have ever existed." What strikes us most after an examination of his plates at the British Museum, is the wonderful strength and direction with which the man tells his tale. His engravings are, of course, without tone, and when he does natural landscapes, as was often the case, this lack of tone is a serious fault; but for draughtsmanship he is marvellous, and it is with joy we learn that such a master said, "Art is hidden in nature, those who care have only to tear it forth." Every one interested in art, and who is not already well acquainted with Durer's work, should make a point of going to the Print Room in the British Museum, and studying carefully all examples of his work. They will, perhaps, at the same time, notice what struck us, namely, that one of the best draughtsmen on *Punch's* staff has evidently been a great admirer of Durer.

Albert Durer.

Woltmann and Woermann, speaking of Durer's landscapes illustrative of his travels south of the Alps, say that "he reveals himself as one of the founders of the modern school of landscape painting."

His "Mill" is remarkable. His etchings are mostly of familiar subjects of every-day life. The great danger of a man like Durer is the bad effect of his influence in later times, for inferior men imitate his faults and not his merit, as is always the case with imitators.

Evolution in art.

There are so many people who cannot understand the

principle of development in art, and cannot distinguish, and appreciate, and value artists according to their periods, and as steps in development, but are now-a-days led by them, holding them up as models for modern painters, whereas they are but the undeveloped efforts of earlier times. There are numbers of young men who paint better than Durer ever did, but who lack Durer's genius; just as an undergraduate may know more science than Galileo, or more mathematics than Newton, but yet be incomparably less great than either Galileo or Newton. A work of art, however, is only valuable for its intrinsic merits, and much as we feel the value of Durer, Michael Angelo, Raphael, and others in their own time, for many of their works as works of art, *quâ* art, we care but little now.

It may be asked how Durer, the Van Eycks, and others can be called "naturalists," when they painted so many religious pictures. Of course the one explanation of this is that they painted conscientiously from living models and natural landscapes, and not from what is called their "imagination." The influence of the times on these painters could not but be tremendous, but if a man must perforce paint an "imaginative" picture, its artistic value must always be in proportion to the truth of the picture; and, therefore, what is good in the picture is the naturalism of it. All the rest seems to our mind—for how could Durer or any one else paint the Virgin Mary?—uninteresting. For Durer and the men of his day there was, of course, every excuse, but to-day there is none; and if painters will persist in painting—from their imagination—woolly landscapes, peopled by impossible men, women, and animals, they will pay the penalty of such vivid imagination—by quick and well-merited consignment to oblivion. The public call such men learned. Learned, forsooth! when Lemprière or the poets have supplied the idea. "There is something great behind a picture," is another favourite expression; well, so there is behind many an impostor's work, but *that greatness belongs to another man.*

An artist looks at the art of the picture, a sentimentalist at the subject alone; to him a badly-painted subject may bring tears to the eyes, to an artist the same subject will probably bring a laugh. What is the sense of copying our predecessors? And even as copyists, these painters of "imaginative" works fall immeasurably below their models. Boticelli towers yet like a giant over Blake and Rosetti, yet we know he was very far from perfect.

The next great German was Hans Holbein the younger. He had advantages over Durer, for he was born when the feeling for nature was strong, and thus started with a clear mind, and arrived at achievements never yet surpassed. Hans Holbein stands out as a master for all time. His portraits are wonderful. He, again, threw all his energy into the study of nature, and his works are chiefly representative of the life of his own times, portraits of merchants and fellow-citizens. There is the full-length portrait of a gentleman in the National Gallery, whose name has not come down to us; yet is the interest less great for that? The dead Christ at Basle too is wonderful, as every one (with good observation, be it always said) who has seen a naked dead body, will affirm, but the anatomy of the skeleton in Holbein's "Dance of Death" would make a first year's medical student laugh. Hans Holbein.

Much of Holbein's best work was done in London, and is at present in England, and we cannot leave this part of the subject without begging our readers to take every opportunity of seeing the work of this wonderful master, who was a naturalistic painter of the first quality. Turning to Switzerland, we find no name worth mentioning; and here we would ask those who trace the effects of sublime mountain scenery on the character of men, why there has been no Swiss art worth mentioning? Of course the explanation is simple—because art has nothing whatever to do with sublime scenery. The best art has always been done with the simplest material. Swiss art.

In Spain and Portugal at this time was being felt

the influence of the naturalism of the Van Eycks. In France the Fontainebleau School was struggling towards nature, but no genius arose. But in Italy there arose a giant, Leonardo Da Vinci. Never has there been such an instance of the combination of scientific knowledge and artistic capacity in one man. In the Louvre is his best work, the portrait of Mona Lisa, a master-piece, but in our opinion a master-piece eclipsed by other master-pieces. Of this great man we are told that "he constantly had recourse to the direct lessons of nature, saying that such teaching at second hand made the artist, not the child, but the grandchild of nature!" Again we read that "Leonardo was wholly in love with nature, and to know her through science and to mirror her by art were the aims and end of his life." Michael Angelo is the next great name we come to. Woltmann and Woerman say that "the mightiest artist soul that has lived and worked throughout Christian ages is Michael Angelo Buonarroti." Now this is a literary dogma to which we are totally opposed, and so we are to all the pedantic criticism which follows, about "strong and lofty subjectivity," "purified ideal," and what not. It is such writing as this that misleads people. Let Michael Angelo be compared with the standard—nature—by any student of nature, and Michael Angelo will fall immediately. Woltmann and Woermann tell us, "he studied man alone, and for his own sake," the structure being to him everything. This is what we always felt to be the *fault* of Michael Angelo, *i.e.* that he was rather an anatomist, and often a lover of pathological specimens, than an artist, although he was a great sculptor. The action of the muscles in his figures may not go beyond the verge of the possible when taken *separately*, and as one would test them with an electric current, but we do insist that when taken as a harmonious whole, the spasmodic action of some muscles as expressed by him would have prevented the exaggerated actions of other by antagonizing their effect. Michael Angelo's work has always given us the feeling that he had a model, on which, with an electric current, he tested the action of each muscle separately, and then

Da Vinci.

M. Angelo.

modelled each one separately whilst the current was joined; in fact that his works are careless scientific studies and not works of art; and herein is his weakness, he passes the bounds of nature. Woltmann and Woermann say first of all he does go beyond the bounds of nature, and that therein lies his greatness, and then they flatly contradict themselves, and say an anatomist has informed them that he does not go beyond the bounds of nature, and they quote this as a merit. Our opinion, also that of a student of anatomy, is that he goes beyond the bounds of nature, and exaggerates nature, and so spoils his work completely. He is far below the Greeks. His influence, too, has been hurtful, for he has kept all but very independent and powerful intellects within his traditions.

Raphael and Correggio.

Raphael and Correggio we will quickly dismiss, though we are fully aware of the £70,000 reputation of the one, and the literary reputation of the other. Raphael does not appeal to us, with his sickly sentimentality, his puerile composition, his poor technique, and his lack of observation of nature. Many of the figures in his pictures, standing some feet behind the foremost, are taller and larger than those in front. We feel sure he had no independence of mind. He was a religious youth, with no great power of thought, and time will give him his true place. But as a taxpayer we must enter a mild protest against the ineptitude of authorities who pay such heavy prices for pictures such as the Raphael referred to. There was a small picture of a head—the head of a doctor—by an unknown hand, hanging near the Raphael, which, as a work of art, is infinitely its superior, but it is by *an unknown hand.* These pictures have since been re-hung. For that £70,000 what a splendid collection of good work by men of the present day could have been purchased, a collection every single picture of which might easily be superior to all the Raphaels in the world as works of art!

Del Sarto.

To the same period belongs Andrea del Sarto, a naturalistic painter of great power. He had more feeling for nature than most of the men of his time, and

his breadth of treatment and truthfulness of colouring are admirable. Of course he painted religious pictures, but from the naturalistic point of view they are wonderful. The student must study the portrait in the National Gallery which was painted by him.

Titian.

The next and last great master of this period is Titian, another of the few entitled to the name of genius. His portraits are his best works. Michael Angelo is reputed to have said, "This man might have been as eminent in design as he is true to nature and masterly in counterfeiting the life, and then nothing could be desired better or more perfect." Titian's works show that he had much more love for nature than Michael Angelo ever showed, and we think it a pity for Michael Angelo's sake that he did not take a leaf from Titian's book instead of criticizing his power of design. His landscape backgrounds show a feeling for nature far above anything painted up to that time. After his day art in Italy fell into evil ways, and no Italian name stands out even to this day. The study of nature was neglected and illogical traditions slipped in, and though some writers on painting talk of "Naturalists," in the period of decadence, citing Caravaggio and others, we would fain know what they mean by the term "Naturalists," for the painters they cite were no students of nature, as is shown by their works, which are more realistic than naturalistic, they being as much students of nature as are the "professional" photographers of to-day, whose ideas of nature are sharpness and wealth of detail. Canaletto's pictures look like bad photographs, and that he used a camera obscura is well known, for Count Algarotti has told us as much. He includes Ribera and other Tramontane masters in the list of those who used the camera obscura. Ribera however, is no small painter, although he is not a great master. The passages in some of his works are masterful, as in the dead Christ at the National Gallery.

The camera obscura.

Ribera.

From the Renascence to Modern Times.

Preamble.

We shall now glance over the works of the great

artists throughout Europe from the time of the Renascence period downwards, and see how and what influence Naturalism had on them, and we shall inquire whether the loving truthfulness to and study of nature and adhesion to the subjects of every-day life was not the secret of the success of all who stand out as pre-eminent during this period. The simplest method will be to take separately the countries where art has flourished.

Spain.

Beginning with Spain, we find at the outset from history that there was but little hope for art. Religion enchained art, and that terrible stain on ignorant Spain, the Inquisition, gave rise to the office of "Inspector of Sacred Pictures." This office was no sinecure, for it controlled all the artists' movements, even prescribing how much of the virgin's naked foot should be shown. Comments are needless, for how could art flourish under such circumstances? One name, however, comes at last to break through all rule, and in 1599, at Seville, was born Velasquez. Velasquez, though moving from his youth up in the most refined society of his native town, had the might of genius to see that the falsely sentimental work of his predecessors was not the true stuff, and he, like all great workers, made Nature his watchword. He is reputed to have said he "would rather be the first of vulgar painters than the second of refined ones," and though he began by painting still life straight from nature, he finally became in his portraits one of the most refined, truthful, and greatest of painters the world has ever seen. Though greatly influenced by the religious tendencies of the time, we find him often painting the life around him, and we have from his brush water-carriers, and even drunkards; but he finally reached his greatest heights and the exercise of his full powers in portraiture. All who have a chance, and all who have not should try and create one, should go to the National Gallery and study the remarkable portrait of Philip of Spain. Rarely has portraiture attained such a level as in this example, and what was the oath this painter took? "Never to do anything without nature before him." The next name, great in some ways, but not to be compared with

Velasquez.

Murillo. Velasquez, is Murillo; and when was he great? Was it in his sickly sentimental religious pictures? No, certainly not. It was in such pictures as the Spanish peasant boys, such as can be seen in the Dulwich Gallery. This gallery is open to the public, and quite easy of access, and should not be neglected. The last Spanish name of note is that of Fortuny, a Catalonian, who is often mistaken for a Frenchman, since he lived in Paris some years ago. Fortuny is deserving of much praise as having been the first to shake off the slavery of "geometrical perspective." His best pictures were homely scenes, chiefly interiors, which he painted as he saw them without any preconceived ideas of perspective. For this new departure, and on account of his work, Fortuny deserves all praise. Since his death, in 1874, no Spanish painter of note has come to the fore, but art in that country languishes in prettiness, false sentimentality, and works done for popularity; the *ephemeridæ* of art.

Dulwich Gallery.

Fortuny.

Germany.

Germany seems to have neglected the lessons taught her by Durer and Holbein, and the mystics seize her and carry her away from nature, and, therefore, from art. Since the days of Holbein no really great man has arisen. Kaulbach, who has been well described as "all literature," is praised by some, but he does not seem to have had even poetic ideas. Nature to him was nothing, but the petty doings of *erring* man were everything. Makart was meretricious and small, and Heffner's pictures are but bad photographs in colour, just the class of photography we are now writing against. Had he been a photographer, he would never have risen above the commonplace, as he has never risen above the commonplace in painting. He sees Nature smally, has no grip of her poetry and mystery, no breadth, but in a finniking way strives after detail, and mistakes it for finish, neglecting all the great truths. Greater is the Hungarian, Munkacsy; but is he an immortal? We doubt it.

Kaulbach.

Makart.

Heffner.

Munkacsy.

Verestchagin.

In Russia, Verestchagin is the only name that has made

any stir, but he, like Heffner, sees Nature meanly, and the only emotion caused by his "show" was called up by the oriental rugs.

Flemish Art.

Rubens and Van Dyck we mention only to show we have not overlooked them. The work of both shows more regard for "getting on" than for art: it is lacking in feeling and in truth. Van Dyck is often wood itself. Teniers the younger as an artist is a long way ahead of either of these men, and in some ways he goes very far. Van Ostade is often good also. His portrait of a man lighting his pipe, a small picture to be seen at the Dulwich Gallery, is a masterpiece of painting, and as fine as anything of the kind done up to this period. This little gem is the work of a lover of nature and an artist. It is quite a small canvas, about 10 × 6, with no "subject," nothing but a man lighting his pipe; yet it is perfect, and far surpasses all the sentimentalities of Raphael, or the *tours de force* of Rubens. The student must see this picture without fail.

Rubens and Van Dyck.

Teniers and Van Ostade.

English Art.

The English painters of note begin with Hogarth, though the bad work of Lely and Kneller is cited as English, because executed in England, yet neither of these two men was English, and no lover of art would be proud of them if they were. Hogarth, then, was the father of English painting, and he began in good healthy lines, for he was a naturalist to the backbone, choosing his subjects from his own time; and though he affected to point a moral in his pictures, still there is the grip of reality and insight into essentials in his work which mark him as a great man. The reader will probably have seen his work at the National Gallery; if not, he should do so at once.

Hogarth.

We pass over Wilson, for in his work is not apparent any love of nature or art, only feeling for money and notoriety. The next name is that of Joshua Reynolds.

Wilson.

Reynolds.

He was a mannerist, and, though successful in his own time, is very mortal. Close on his baronetted heels came one of the true immortals, Thomas Gainsborough, one of the best portrait-painters the world has ever seen. His landscapes, though better than any up to his time, are not good, and his reputation rests chiefly on his power of portraiture, in which he was certainly a master. Naturalism breathes from his canvases; he has seized the very essence of his sitters' being, and portrayed them full of life and beauty. See his portrait of Mrs. Tickell and Mrs. Sheridan in the Dulwich Gallery; you will never forget the charm and the beauty of the ladies, wherever you go afterwards. Mrs. Siddons, in the National Gallery, too, is wonderful. Study well these two, and then go and gaze on a portrait by Reynolds, and we doubt not you will have learnt something of the gulf that separated the two painters. Gainsborough was, to our mind, the first immortal in English art, and fit to rank with Van Eyck, Holbein, Da Vinci, Titian, and Velasquez. Leaving "the Kauffman" and Fuseli to those who can admire them, we pass on to poor George Morland, a genius in his own branch of art. This man studied and painted from life, and his pictures bear testimony that he did so, and notwithstanding the drawbacks caused by his unfortunate temperament, his name lives and grows more respected every day, for his study was nature, and so his work will always be interesting.

Gainsborough.

Kauffman and Fuseli.

Morland.

We now come to a great and deservedly well-known name—that of Thomas Bewick, the engraver on wood. Here we have a man working in a humble way, humble that is as compared with painting or sculpture, yet loving and studying nature in every detail, and following her in all her mystery and charm, only daring now and then to add some quiet fancy of his own, and yet he lives and his name grows greater every day. A true naturalist and a real artist was he, and his fame will be lasting. When Wilson is archaic, Bewick will be held up for admiration, so powerful is the effect of the honest study of nature in his work. His birds and quadrupeds we all know; but if any reader should not know them, he should at once

Bewick.

get a copy and study the cuts in it. Mr. Quaritch has, we believe, recently issued a reprint of the book.

Wood-engraving.

Wood-cutting has degenerated. Men of little training and no artistic feeling took it up, and slowly but surely the art decayed until it became purely mechanical, and so it has remained in England. Now it bids fair to be superseded by photo-mechanical processes, and it will undoubtedly be entirely superseded directly a really artistic process of reproduction is discovered for printing with the type. In the United States, however, wood-engraving took a fresh start, and brought photography to its aid, and our opinion is that the effect obtained in photographs printed on albumenized paper became the effect which the wood-cutters aimed for, and the result is a print of wonderful detail and beauty, but for our taste it is too polished and neat, the effect of overlaying is far too visible, and, in short, it does not render nature truly, and though far surpassing anything of the kind done in England, it is, as a work of art, altogether eclipsed by Bewick's work, the reason being that Bewick only took wood-engraving as a medium for the expression of the beauties of nature, every line in his blocks being full of meaning. But the hydra head of commercialism stepped in, and wood-engravers with little or no feeling for or knowledge of nature set to work turning out the blocks like machines. Photography will keep these artisans from falling utterly away from nature, yet such work is harmful and of no good to us, though it may please the public. Had there been no constant returns to nature (as there must always be in some measure when a photograph is used) decay would be sharp and speedy, but photography bolsters up the dying art. Lately several wood-blocks have been produced cut from photographs, wherein all the beauty of the photographs has been utterly lost by the engraver, and the results are bastard slips of trade; but we shall have more to say on this point later on. One thing at any rate photography can claim: that is so long as it can be practised, art can never slip back to the crude work done in some eras of its decadence.

Water-colours.

Now we come to a branch of art which is essentially

English, namely, painting in water-colours. It is not meant by this that water-colour is a new medium, or that the English water-colourists were the first to use the medium, for the tempera paintings were but water-colours, and Albert Durer and others used it considerably; but what is implied is that the English were the first to adopt it largely and develop it, though it was reserved for the modern Dutchmen and Frenchmen to show its full capabilities. The painter in water-colour has not, of course, the same control over his medium as he has in using oils, and the work when finished even by the best artists, has an artificial look and belies nature. But to see really true water-colours the reader must not look for them in English galleries. No Englishman ever came so near to nature—to the subtleties of nature—in water-colour as do the modern Dutch and French painters. The reader would do well to go to Goupil's exhibitions of modern Dutch and French painters, which are held from time to time, and keep a look-out for water-colours, and he should carefully study them at the Paris *Salon*. Prophecy is always risky and of little count, but we would like to venture a prophecy that water-colours will never take a very prominent place in art, because no great genius will ever be content with the medium. Of the bulk of English water-colours of to-day there is not one word of praise to be said, and the student in art matters will do well to avoid all exhibitions of this work until he has carefully studied the best work in art, and until he has a greater insight into nature; and then let him go to the various water-colour exhibitions, and if he does not receive a mental shock, we shall be greatly surprised. There is but little nature in them, indeed but little anything except pounds, shillings, and pence. The best of them are nauseous imitations of Turner, and the whole of them show an entire ignorance of the simplest phenomena of nature, which would be startling did we not remember that most of them are painted from "notes" and "memory." These remarks do not of course apply to such work as is done by a few modern painters, such as Mr. Whistler, but these paint in oils first and water-

colour afterwards. The first man worth considering in this branch of art is Girtin, who was naturalistic as far as he could be, and had he not died at such an early age (under thirty) the probability is that Turner would have been eclipsed by him. Of Turner we shall speak later on. The name of David Cox rises above the men of his time; but, after all, his is not the name of an immortal. He aimed well, however, for he tried to paint the life and landscape of his time. Much has been written about De Wint; but if we go to the basement of the National Gallery and study De Wint, and then go to Norfolk and study the landscape there, we shall find Mr. De Wint is but a sorry painter. One thing, however, may be said in his praise. He painted out of doors —not in his studio—and was no doubt a lover of nature. His peasants are not the fearful travesties of Hill, Barret, and Collins. Lewis and Cotman have, however, done some better things than De Wint.

Girtin. D. Cox. De Wint.

Returning to oil painting, we must pass over the long list of names, including Presidents of the Royal Academy, whose names are now all but if not quite forgotten, for their peasantry of the Opera Bouffe, their landscapes after Claude, their works of the imagination can now interest no one, and never did interest any but the painters themselves and an uneducated public.

Then we come to Turner, that competitor in painting. To use a colloquialism—"There is a great man gone wrong." Had he but lived to-day, he might have been an immortal; but he does not live, and his lease of fame is not for so long a time as is generally imagined. It has had an artificial afflatus through the writings of a "splendidly false" critic, and, curiously enough, the critic, like the artist, has insight enough to see the true purpose of art, namely, that the artist should be true to nature, and should be an interpreter of the life and landscape of his own time; and, curiously enough, the critic, like the artist, does not know what nature is. The critic has taken Turner as nature unalloyed, and hence the whole of that gigantic work of his is built on sand. The critic never had much, if any, weight with

Turner.

the best artists. Even Turner himself was amused with the reasonings of his eulogistic logic! and gave it out as much as a man can give out about his eulogist, that all the tall talk about his pictures was rubbish. But Turner was a great and strong man. To say of his earlier pictures that he painted in *rivalry* or imitation, if you like, of Wilson, Poussin, and Claude, is to say they are bad, as they undoubtedly are. This spirit of rivalry never seems to have deserted Turner, for in his will he left directions bequeathing one of his pictures to the Academy, on condition it should be hung side by side with a Claude. The spirit of this is, of course, patent. He thinks he has beaten Claude, and that is enough. No great genius would have descended to that. Art was to him an unending competition, and the result was that nature was neglected; and though he revelled in the life and landscape of his own times, yet the small spirit of competition was his ruin. Had he humbly, like Constable, had faith in his tenets, and lovingly and modestly clung to nature, his fame might have been immense and everlasting. His later pictures are, of course, the eccentricities of senility, and the false colourings seen by a diseased eye, as has been lately shown, and are as unlike nature as one could expect such work to be. But let us take his "Frosty Morning" at the National Gallery. Look well at it, and what do you find? Falsity everywhere, and most of the essence and poetry of a frosty morning completely missed. The truest picture by Turner that we know is a little aquarelle at South Kensington—"A View on the Thames." Here, then, when we get Turner true to the truth which he felt in himself, and not competing (that we know of), what do we find? We find him immensely behind De Hooghe, in a truthful and poetic expression of nature, as is well possible for so great a man. The Liber Studiorum should also be carefully studied, noting the falsities; trees drawn by rule, figures not drawn at all, the total disregard of the phenomena of nature, sometimes even the evidence of several suns in one picture. There is no truth of tone; no atmosphere; the values are all wrong; all the charm and

subtlety of nature completely missed. Go to De Hooghe or Clays after this, and what a difference! Here are no meretricious adornments, but more nature and less of erring, feeble man and his mannerisms. Turner is not the man to study, and if you cannot "understand him," well and good. Many artists cannot and do not wish to, for there is nothing to understand, and many French painters of great ability jeer at his very name. With what relief we turn from Turner to Constable and Crome. These two East Anglians are giants in the history of English painting. All should study Constable's works at the National Gallery and South Kensington; and his life by Leslie is well worth reading, as showing how much of a naturalist in theory he was. The best example of his work that we know is a little river scene, with some willows, which we saw at South Kensington Museum. His work is not, however, perfect. You feel that there is no atmosphere in his pictures. This is due to their being out of tone. He had not the knowledge of nature that characterized De Hooghe, and was not always faithful to his creed: hence his failings. For though we read in his life such passages as this:—"In such an age as this, painting should be *understood*, not looked on with blind wonder, nor considered only as poetic inspiration, but as a pursuit—*legitimate, scientific*, and *mechanical*." . . . "The old rubbish of art, the musty, commonplace, wretched pictures which gentlemen collect, hang up, and display to their friends, may be compared to Shakspeare's 'Beggarly Account of Empty Boxes.' Nature is anything but this, either in poetry, painting, or in the fields." . . . "Observe that thy best director, thy perfect guide is nature. Copy from her. In her paths is thy triumphal arch. She is above all other teachers." . . . "Is it not folly," said Mr. Northcote to me in the Exhibition, as we were standing before ——'s picture, "for a man to paint what he can never see? Is it not sufficiently difficult to paint what he does see? This delightful lesson leads me to ask, what is painting but an imitative art—an art that is to *realize*, not to *feign*. Then some dream that every man who

De Hooghe and Clays.

Constable and Crome.

will not submit to long toil in the imitation of nature, flies up, becomes a phantom, and produces dreams of nonsense and abortions. He thinks to save himself under a fine imagination, which is generally, and almost always in young men, the scapegoat of folly and idleness." . . . "There has never been a lay painter, nor can there be. The art requires a long apprenticeship, being *mechanical*, as well as intellectual." . . . "My pictures will never be popular," he said, "for they have no *handling*. But I see no *handling* in nature." . . . Blake once, on looking through Constable's sketch-books, said of a drawing of fir-trees, "Why, this is not drawing, but *inspiration!*" and Constable replied, "I never knew it before; I meant it for drawing." . . . "If the mannerists had never existed, painting would have been easily understood." . . . "I hope to show that ours is a regularly taught profession; that it is *scientific*, as well as poetic; that imagination alone never did, and never can, produce works that are to stand a comparison with *realities*." . . . "The deterioration of art has everywhere proceeded from similar causes, the imitation of preceding styles, with little reference to nature." . . . "It appears to me that pictures have been overvalued, held up by a blind admiration as ideal things, and almost as standards by which nature is to be judged, rather than the reverse." . . . "The young painter, who, regardless of present popularity, would leave a name behind him, must become the patient pupil of Nature." Yet Constable was not always true to himself.

Crome.

Crome, who was, in our opinion, a better painter than Constable, was like him a naturalist, and true to his faith. There is an amusing scene in his life, which we will quote. "A brother of the art met Crome in a remote spot of healthy verdure, with a troop of young persons. Not knowing the particular object of the assembly, he ventured to address the Norwich painter thus: 'Why, I thought I had left you in the city engaged in your school.' 'I am in my school,' replied Crome, 'and teaching my scholars from the only true examples. Do you think,' pointing to a lovely distance, 'either you or I can do better than that?'"

Crome has well expressed his view of art in the following remarks, which we read in his life :—"The man who would place an animal where the animal would not place itself, would do the same with a tree, a bank, a human figure—with any object, in fact, that might occur in Nature; and therefore such a man may be a good colourist or a good draughtsman, but he is no artist." At the National Gallery is to be seen a very good specimen of his work, and one well worth studying.

Callcott, Nasmyth, Müller, and Maclise.

We now pass over the names of Callcott, Nasmyth, Müller, and Maclise, none masters, though they have been called "great colourists," whatever that may mean. A great colourist should be a true colourist, and Müller is almost chromographic in originality in this line.

Stansfield, Creswell, Linnell, and Cooke.

Stansfield, Creswell, Linnell, and Cooke, are names that stand out at this period, and the greatest of them is Cooke; his painting of "Lobster Pots," at South Kensington, being wonderfully fresh and true; but none are poets; they have but little insight into nature, though Linnell at times shows the true feeling. A long list of well-known names follows, such as Hilton, Haydon, Etty, and Eastlake, but none are masters, and we only mention them to caution against them. Of considerable power were Wilkie, Stansfield, Mulready, Leslie, Landseer, and Mason, but none of them was really good, although much has been written and said in praise of their works. They are all false in sentiment, and all lack insight into the poetry of nature. In technique Wilkie and Landseer are often strong, and they will always appeal to a certain class of people. Mason's work is a fine example of the folly of introducing the so-called "imaginative" into landscape. Take his "Harvest Moon," when and where did ever men exist with such limbs? the whole picture smacks of the model and of the "stage idealism;" there is no nature there, but a laughable parody of it. The next really great name in English art is that of Frederick Walker, a naturalist, and above all an artist who had a great grip of and insight into nature. But in his work the traditions of the idyllic peasants of the golden age linger,

Wilkie, Stansfield, Mulready, Leslie, Landseer, and Mason.

Wilkie and Landseer.

Mason.

F. Walker.

and we find his ploughman merrily running along with a plough as though it were a toy cart: and what a ploughman!—he never saw a field in his life. This is a serious fault, and takes away from the greatness of Walker, yet notwithstanding this his name will always be a landmark in English art. The reader will be able to study his work in the National Gallery. The date of Walker's death brings us down to the actual present. Regarding living English painters we will remain discreetly silent. It must be remembered that English art is young, beginning as it practically does in the eighteenth century, for the miniature-painters cannot count for much, and we must therefore not expect too much. Great men, especially great artists, are rare as Koh-i-noors. England can boast of a few, such as Gainsborough, and Constable and Crome. Of American art there is but little to say. No name stands out worthy of record till J. M. Whistler appears, and he, though an American by birth, can hardly be called an American painter, for the life and landscape of his own country he neglects, as also do Sargent and Harrison, two strong painters, both French by education. Whistler's name rises far above any artist living in England, his portrait of his mother and that of Sarasate are works good for all time and worthy to be ranked with the best. Mr. Whistler's influence, too, has been great and good. As a pioneer he led the revolt against ignorant criticism by his attack on Ruskin. Vide "Art and Art Criticism, Whistler *v.* Ruskin." His life in England has been a long battle for art, and though many do not approve of all his methods, and still less of his brilliant but illogical "Ten o'Clock," his work and influence have been for good. Another great step in advance, introduced by Mr. Whistler, has been the reform in hanging pictures; though he has not been allowed to carry out his plans thoroughly, yet he has managed his exhibitions much more artistically than any others in the country. In landscape his night-scene at Valparaiso is marvellous, and we doubt whether paint ever more successfuly expressed so difficult a subject. But as even Homer nods, so

Whistler.

Sargent and Harrison.

does at times Mr. Whistler, and sometimes "impressions" in oil, water-colour, and etching appear with his name, an honour of which they are unworthy, and posterity will be very alert to bring up these evil "nocturnes" against him. Yet so long as art lives will Mr. Whistler live in his Sarasate, his portrait of his mother, Lady Campbell, and some smaller works. Mr. Sargent's Carnations and Lilies must be fresh in our readers' minds. We will only say of it that we never saw the actual physical facts of nature so truthfully and subtly rendered. It is indeed a picture whose title to admiration will be everlasting, and if the reader has not already seen it or, having seen it, has listened to ignorant critics, and passed it over as being "ugly," let him go to South Kensington and view it again, for the nation is its fortunate possessor. Let him look well at it, and consider what it is. It represents a garden at the time of day when the sunlight is fading but has not quite gone—crepuscule in fact, and with the dying light of day is represented the artificial light of Chinese lanterns. This is indeed a masterpiece. Mr. Harrison's "In Arcady" is wonderful in its effect of sunshine through trees, though the picture is marred by the low type of the models introduced and by the painting of the figures. Had it but been pure landscape it would have been a wonderful piece of work. Never have we seen the effect of noontide heat so well rendered. This, then, brings us to the end of American art, and it is to be hoped that men strong as these will go back to their own country and paint the life of their own land and time. William Hunt is a man much thought of in America, but we have never seen any of his paintings, though his book shows him to be a naturalist to the heart, and the reader will do well to read it.

Sargent.

Harrison.

Hunt.

Here, then, we must leave England and America, only remarking that things look bad for the education of the American public when the best Americans stay away, and when rich sausage-makers buy Herbert's works with which to educate themselves, and when catalogue compilers take over boat-loads of English water-colours

with which still further to lead them wrong. America wants no such education as can be given by Herbert's senilities or English water-colours. She wants a band of earnest young men, who, having learned their technique in the best schools in the world, namely those of Paris, shall return to America and paint the scenes of their own country, and therein only lies the hope for American art.

Dutch Art.

Rembrandt.

The first mighty name of the modern period is that of Rembrandt Van Ryn. Holland, by her bravery, had thrown off the Spanish yoke, and with it the crushing yoke of Catholicism, and stood free to follow her own bent. As a result of this freedom a body of Naturalists arose who did more for modern art than any body of painters in the world. Rembrandt, though a giant and fit for the company of the immortals, Van Eyck, Velasquez, &c., was not perfect, for sometimes the power of tradition lurks in his work, and he forces his portraits by warm colours in the background, an artifice which was not at all necessary, and which Mr. Whistler has done without. There are a number of his works in the National Gallery, and a good one in the Dulwich Gallery, where is also a great Velasquez, so that the reader should not fail to go there. Rembrandt was inspired by the simple life around him, portraits and interiors satisfied him. It is a significant fact that the greatest painters, Durer, Da Vinci, Velasquez, and Rembrandt have been content to paint the life of their own times and not to draw upon their imagination. The learned painter, it cannot be too often repeated, is he who is learned in all the resources of his art, and we question very much whether one great reason why so few great painters have arisen is not that artists as a rule are so poorly and narrowly educated. At any rate, the opposite holds good, that the most highly and soundly educated artists, men who moved and held their own in the best intellectual societies of their time, were naturalists. But to return to Rembrandt. Perhaps his mastery, his grip of nature, show forth as

much in his etchings as in his paintings. He, like all great etchers, and there are few enough, used etching only within its legitimate limits, that is, as a method of expression by line, in a simple, direct and brief manner. An etching by a master may be looked upon in the same light as an epigram,[1] sonnet or ode by a poet. Many of Rembrandt's etchings can be seen in the British Museum, and should be thoroughly well studied ; after which study, pick up some of the unmeaning work of Seymour Haden or any other modern etcher, except Mr. Whistler and Rajon, and you will, without doubt, distinguish the difference. Most modern works are good examples of how *not* to etch. Line after line is put in without any meaning at all; there is no evidence of the study of nature in the work and the subjects are trivial and commonplace. One of the greatest evils commercialism has done to art is to ruin modern etching, by having pictures of the old masters copied slavishly by the etcher, and elaborated and worked up, so that one wearies of them. Such work can scarcely be said to rise to the dignity of fine art at all, and Rembrandt, we think, would rise in horror from his grave, if he could see his paintings reproduced by etchers. *Any* reproduction of a picture is unsatisfactory and does not become fine art at all, but is only useful to publish reflections of the mind whose work it is intended to represent, and for our part we think a good photogravure does this better, because more faithfully, than any other process. It is difficult to imagine the mind that can set itself to work for months, even years, at an engraving or etching from another man's work when the world is so full of pathos and poetry, and subjects abound on all sides. No great man was ever found in this category.

Etchings.

Durer and Rembrandt etched, and Mr. Whistler etches from Nature direct, not impertinently—there is no other word for it—by tampering with other men's work. But the public will buy these reproductions, and an artificial value is thus given to them, and the dealers will of course encourage whatever pays. One etching by Rembrandt himself is worth all these reproductions of

Print-sellers.

[1] Epigram here being used in the old Greek sense.

pictures by engraving, etching, mezzo-tint, or photogravure, because it is an original work of art, the outcome of the loving study of nature. Not long ago a letter appeared in one of the literary "weeklies," complaining of the stamping of photogravures by the Print-sellers' Association. All the press took up the cry, and much ignorance of the real methods and aims of art was displayed. But the reader will say this letter was probably written by a real, though perhaps mistaken, lover of art. No! ingenuous reader, it was *written by a tradesman—a print-seller.* Did the reader but know the wiles and practices of the print-sellers and art-publishers, he would be a sadder if not a wiser man. The obvious answer to this print-seller's letter is, of course, that with the works of living painters, the style of reproduction rests with the painter, and if the artist is satisfied with photogravure, what has any one else to say—painters are the best judges of these things. Very few painters we know would entrust the reproduction of their pictures to etchers or engravers, or would countenance the *publication of another man's view of their work.* We have seen photographs of Whistler's Sarasate, but never engravings of it. With bad paintings, on the other hand, the engraving of them has often made the painter's name as well as the engraver's. We could cite an example of a living painter who owes his reputation chiefly to the engravings of his works, and poor things they are even when embellished by the process. At the time this discussion was raging amongst the philistines, it was gravely asserted that "engravings always rose in price," and this was given as a reason for buying them. Have the engravings of Mr. Landseer's pictures risen in price! Ask the poor subscribers to the first copies. Will the engravings of Doré's works rise in price? *Quien sabe?* If the reader is under any such erroneous idea, let him attend a few sales of engravings in London, and he will see proofs of etchings and engravings knocked down for a few shillings.

Van Ostade.

Leaving with regret the great Rembrandt, we pass over several smaller but often-quoted names, the most influential name we come to is Van Ostade, another naturalist of great

power, of whom we have already spoken. Next we come to De Hooghe. This is the man who first really gripped thoroughly and expressed truly on canvas the mystery and poetry of the open air. There are two specimens (courtyards) of this unrivalled painter's work at the National Gallery. They are an education in themselves, and are well worth long and careful study for hours, indeed there are no pictures more worthy of study. There they hang, fresh as nature and beautiful as paint can express, good, unsurpassable for all time—why? Because the painter has known how to give the sentiment of *plein air*. There they hang true and lovely, pictures of Dutch life in the seventeenth century. No history can come up to them in historic value, none can be so true, and no poetry surpasses them in expression. De Hooghe.

Cuyp we will pass over with few words. A great second-rate man he undoubtedly was, but his hot colouring smacks of the imagination rather than of nature. Paul Potter and Ruysdael also are men with unduly great reputations; they are both false in sentiment, and they handled nature with impertinence. Any careful observer can see that Ruysdael played with the lighting of landscapes as did Turner, and of course it is well known that he was not particular as to painting his landscapes on the spot. There is no nature in him, it is all Ruysdael, Ruysdael, Ruysdael, eternally Ruysdael. Cuyp.

Hobbema at times verged near the truth and greatness, as for instance in the painting of a road with trees, in the National Gallery, which our readers will do well to study; but he is insincere and untrue all through and was not a naturalist. In sea painting, Van der Velde is wonderful in his truth and love of nature. Good specimens of his work can be seen in the National Gallery. Hobbema. Van der Velde.

Coming down to our own times, the elder Israels stands out a giant, a master unsurpassed. We have only been able to see a few of his pictures, but those show us the master. Hopeful, indeed, is the art of Holland and Belgium with such men as Artz, Arris, Mauve, Maas, Israels the younger, Boosboom, and others. The reader will often have opportunities of seeing works by these Israels.

men at the French Gallery, the Hanover Gallery, and Goupil's, and he should take every opportunity of studying their works most carefully.

France.

And now, lastly, we come to France—France where art has in modern times reached its highest level. France in modern times has always been the leader of civilization in Europe, and even now she is in the van of modern progress, our intellectual mother. We may have a finer literature to show, in Germany science may be more profound, but in all that is greater than literature or science, that is in solving the problem of being and throwing off the yoke of religious and political despotism, France has become the leader. Practical, energetic, and thrifty, the French with all their faults, still remain in many ways the first nation of the world. France and the French have more of the Ancient Greek's *esprit* than any other nation has or ever has had. In all the humanizing influences that distinguish brute man from civilized man, the French are to the fore, but in histrionic, glyptic and pictorial art, she is unapproachable, and still reigns Queen of the Arts, in these branches.

Poussin and Le Brun.

Passing over Nicolas Poussin, Le Brun and other lesser names, whose works are not those of masters, we

Claude Lorraine.

arrive at Claude Lorraine, who may claim to have an inkling of the truth and whose work shows a distinct advance on Poussin, but who after all is no master because not loyal to nature, and therefore his already doubtful reputation will go on diminishing. The first name that really stands forth as great in French art is that of

Watteau.

Watteau. Watteau, however, cannot be ranked among the Immortals, for though his technique was marvellous, and his power of drawing unsurpassed, he like all his contemporaries, artists and otherwise, neglected nature, living as they did in the artificial times of Louis XIV. There is a picture in the National Gallery which well explains what we mean. Then name after name is handed

down to us, but in vain do we look for a master among them. Boucher and Greuze still have admirers, but they are not great painters, because they did not study nature or at least did not succeed in painting her, as it is very easy to see from their works. De la Croix strove to rise from the artificial influence of the time, but he was not strong enough to become a master. It was reserved for Ingres to make a real advance. He, though imbued to some extent with the old spirit of classicism, was a deep lover of nature, and the story of the struggle for the mastery between those two opposing tendencies is the story of his art and life. Though he rises above all previous painters of his country, he cannot be ranked with the masters. With Ary Scheffer there was a retrogression which in its turn was counteracted by De la Roche. It was De la Roche who said an artist would one day have to use photography. Still, in vain do we look for a genius, and until Constable's pictures exhibited in 1824 in Paris, aroused the French as to the real aims of art, no really great master appears. But when practical France saw, she immediately took up naturalism. Then we have first Descamps, who took up the newly revived ideas, but failed, and Rousseau made the real departure—the poetry and mystery of nature roused in him an ardent sympathy, and all honour to him for struggling on at Barbizon, in the face of the neglect and contumacy of the *Salon*. But Rousseau, hero though he was, never rose to be a mighty painter, and his works fall far behind those of the best painters of to-day, but as a pioneer his name will always be remembered, and though he failed, he at least took Nature as his watchword. After Rousseau came Corot, a master good for all time. His early works show signs of the classical spirit, from which he had not yet shaken himself free, thus we sometimes see in his early works, peasants strangely habited and reminding one of the seventeenth century or ancient Greece, which is of course ridiculous; but his later work is true and great. Full of breadth and feeling for the subtleties and poetry of nature, he has never been surpassed. Examples of his work in England can sometimes be seen

Boucher and Greuze.

De la Croix.

Ingres.

De la Roche.

Descamps.

Rousseau.

Corot.

in the French Gallery, the Hanover Gallery and at Goupil's, but it must be remembered that great as Corot is, there is much of his work that is bad. Another great painter is Daubigny, a contemporary of Corot's, and though not such a subtle observer as Corot, still he is a painter whose work has had great influence, and will live though it has been surpassed by younger men. Troyon was another who like Corot loved and studied and painted from nature, but he lacked the insight into nature that Corot had, and his work is not as true as that of his contemporary.

Daubigny.

Troyon.

At length, however, we arrive at an Immortal name, that of Jean François Millet. This great man must not be confounded with two Jean François Millets who lived years before, and who were not artists at all though painters. Everything about J. F. Millet the Great, is worthy of study. Let the student seize every chance of studying his works, chances which will, alas! be rare enough as many of his best pictures are in America and most of the others in France. His pastels and water-colours are not very good, but his etchings which (reproduced) can be seen in the British Museum, are valuable for strength and power. Here is a directness of expression never surpassed. Before leaving him we will quote a few passages from his letters:—

Millet.

J. F. Millet.

"I therefore conclude that the beautiful is the suitable. . . . Understand that I do not speak of absolute beauty, for I do not know what it is, and it seems to me only a tremendous joke. I think people who think and talk about it do so because they have no eyes for natural objects; they are stultified by 'finished art,' and think nature not rich enough to furnish all needs. Good people, they poetize instead of being poets. Characterize! that is the object.

"When Poussin sent to M. de Chantelon his picture of the 'Manna,' he did not say, 'Look, what fine *pâte!* Isn't it swell? Isn't it tip-top?' or any of this kind of thing which so many painters seem to consider of such value, though I cannot see why they should. He says: 'If you remember the first letter which I wrote to you about the movement of the figures which I pro-

mised you to put in, and if you look at the whole picture I think you will easily understand which are those who languish, which are filled with admiration, those who pity, those who act from charity, from great necessity, from desire, from the wish to satiate themselves, and others—for the first seven figures on the left hand will tell you all that is written above, and all the rest is of the same kind!

"Very few painters are sufficiently careful as to the effect of a picture seen at a distance great enough to see all at once, and as a whole. Even if a picture comes together as it should, you hear people say, 'Yes, but when you come near it is not finished!' Then of another, which does not look like anything at the distance from which it should be seen, 'But look at it near by; see how it is finished!' Nothing counts except the fundamental. If a tailor tries on a coat, he stands off at a distance enough to see the fit. If he likes the general look, it is time enough then to examine the details; but if he should be satisfied with making fine button-holes and other accessories, even if they were *chefs-d'œuvre,* on a badly-cut coat, he will none the less have made a bad job. Is not this true of a piece of architecture, or of anything else? It is the manner of conception of a work which should strike us first, and nothing ought to go outside of that. It is an atmosphere beyond which nothing can exist. There should be a *milieu* of one kind or another, but that which is adopted should rule.

"As confirmation to the proposition that details are only the complement of the fundamental construction, Poussin says, 'Being fluted (pilasters) and rich in themselves, we should be careful not to spoil their beauty by the confusion of ornament, for such accessories and incidental subordinate parts are not adapted to works whose principal features are already beautiful, unless with great prudence and judgment, in order that this may give grace and elegance, for ornaments were only invented to modify a certain severity which constitutes pure architecture.'

"We should accustom ourselves to receive from nature

all our impressions, whatever they may be, and whatever temperament we may have. We should be saturated and impregnated with her, and think what she wishes to make us think. Truly, she is rich enough to supply us all. And whence should we draw, if not from the fountain-head? Why for ever urge, as a supreme aim to be reached, that which the great minds have already discovered in her, because they have ruined her with constancy and labour, as Palissy says? But nevertheless, they have no right to dictate for mankind one example for ever. By that means the productions of one man would become the type and the aim of all the productions of the future.

"Men of genius are gifted with a sort of divining-rod; some discover in nature this, others that, according to their kind of scent. Their productions assure you that he who finds is formed to find; but it is funny to see how, when the treasure is unearthed, people come for ages to scratch at that one hole. The point is to know where to find truffles. A dog who has not scent will be but a poor hunter if he can only run at sight of another who scents the game, and who, of course, must always be the first. And if we only hunt through imitativeness, we cannot run with much spirit, for it is impossible to be enthusiastic about nothing. Finally, men of genius have the mission to show, out of the riches of nature, only that which they are permitted to take away, and to show them to those who would not have suspected their presence, nor ever found them, as they have not the necessary faculties. They serve as translators and interpreters to those who cannot understand her language. They can say, like Palissy, 'You see these things in my cabinet.' They, too, may say, 'If you give yourself up to nature, as we have done, she will let you take away of these treasures according to your powers. You only need intelligence and good will.'

"It must be an enormous vanity or an enormous folly that makes certain men believe that they can rectify the pretended lack of taste or the errors of Nature. On what authority do they lean? With them who do not love

her, and who do not trust her, she does not let herself be understood, and retires into her shell. She must be constrained and reserved with them. And, of course, they say, 'The grapes are green. Since we cannot reach them, let us speak ill of them.' We might here apply the words of the prophet, 'God resisteth the proud, and giveth grace to the humble.'

"Nature gives herself to those who take the trouble to court her, but she wishes to be loved exclusively. We love certain works only because they proceed from her. Every other work is pedantic and empty.

"We can start from any point and arrive at the sublime, and all is proper to be expressed, provided our aim is high enough. Then what you love with the greatest passion and power becomes a beauty of your own, which imposes itself upon others. Let each bring his own. An impression demands expression, and especially requires that which is capable of showing it most clearly and strongly. The whole arsenal of nature has ever been at the command of strong men, and their genius has made them take, not the things which are conventionally called the most beautiful, but those which suited best their places. In its own time and place, has not everything its part to play? Who shall dare to say that a potato is inferior to a pomegranate?

"Decadence set in when people began to believe that art, which she (Nature) had made, was the supreme end; when such and such an artist was taken as a model and aim without remembering that he had his eyes fixed on infinity.

"They still spoke of Nature, but meant thereby only the life-model which they used, but from whom they got nothing but conventionalities. If, for instance, they had to paint a figure out of doors, they still copied, for the purpose, a model lighted by a studio light, without appearing to dream that it had no relation to the luminous diffusion of light out of doors—a proof that they were not moved by a very deep emotion, which would have prevented artists from being satisfied with so little. For, as the spiritual can only be expressed by the observation

of objects in their truest aspect, this physical untruth annihilated all others. There is no isolated truth.

"The moment that a man could do something masterly in painting, it was called good. If he had great anatomical knowledge, he made that pre-eminent, and was greatly praised for it, without thinking that these fine acquirements ought to serve, as indeed all others should, to express the thoughts of the mind. Then, instead of thoughts, he would have a programme. A subject would be sought which would give him a chance to exhibit certain things which came easiest to his hand. Finally, instead of making one's knowledge the humble servant of one's thought, on the contrary, the thought was suffocated under the display of a noisy cleverness. Each eyed his neighbour, and was full of enthusiasm for a manner."

Bastien Le Page.

The only painter whose work we had judged before seeing a specimen was that of Le Page, as we had entirely judged him from woodcuts, photogravures, and photographs, and we find lately, on seeing some of his work, that we had all along misjudged him, thinking him a much greater painter than he really is. This study of Le Page has been a revelation to us of the quite misleading and dangerous power of reproductions of a painter's work in black and white. All the black and white reproductions that we have seen of this painter's work give the impression of being much greater than the originals really are, and we would caution all our readers against judging of any painter's or sculptor's work by a reproduction by any method, from etching to cheap wood-cutting, for they may be woefully misled. We feel sure these reproductions—no matter of what kind—will have a very harmful effect on art, and will give quite wrong opinions of work; and they are, no matter of what kind, whether etching, engraving, photogravure, woodcut, or photograph, to be strongly condemned. Le Page is not even always strong in drawing, and his sentiment is often false, untrue, and brutal, and not nearly so fine as Courbet's sentiment, yet Courbet's preceded him; he was but a follower, where Courbet was a leader.

Of the older living painters, Jules Breton and Lhermitte stand out as strong men; but Breton has long ago been passed, and Lhermitte is not the man he was, but some of Lhermitte's work will live always. There is a remarkably fine Lhermitte in the Luxembourg, which every one should try and see. Both are naturalistic painters. Of other living painters much might be written, for they, in our opinion, represent the acme of painting and its highest development. We feel that we never saw painting done to perfection until we saw the Paris *Salon*, and we strongly recommend all readers of this book, after they have studied the pictures and sculptures here referred to, and have some insight into nature, to make without fail a good pilgrimage to the French *Salon*, where they will see painting at its highest development, though of course there is much bad work in the *Salon*, as at other exhibitions. Breton and Lhermitte.

The marvellous pastel work, aquarelles, and charcoal drawings will all show them how immeasurably behind France, England is in all the pictorial arts. Englishmen do not know what drawing is—therein lies the cause of their failure. This very year we went to the Academy the day after seeing the Salon, and what a fall was there!

Of living French painters the work the student should carefully study is that of Meissonier, Cabanel, Carolus Duran, Pelouse, Protais, Detaille, Perrandeau, Doucet, Petitjean, Busson, Landelle, Appian, Cazin, Harpignies, La Touche, Lansyer, Le Roux, C.M.G., Abraham, Anthonissen, Moreau de Tours, Nys, Nobillet, Marinier, Michel M. Japy, Carne, Vallois, Jan-Monchablon, Joubert, Boucher, J. F., Cabrit, Durot, Poithevin, Beauvais, Denant, Dufour, and many others whose names we forget for the moment, but, be it said, all naturalistic painters to a marvellous degree.

This brings us to the end, so we will leave painting with France in the van and Holland and Belgium closely following and America and England floundering in the rear of these three, for we are no believers in the tall talk of the greatness of the immediate future of English paint-

ing—the painting of the young School is after all with a few notable exceptions, but a poor echo of French work.

Sculpture.

With sculpture the same old story greets us that we meet with in the history of painting. After the masterpieces of Greece come the puerile conventionalities of the Early Christians. But as we have hitherto done so shall we continue—that is, we shall discuss the masters only, and the first we come to is Niccola Pisano. Though his work shows that he was still imbued with the spirit of classicism, yet he struggled to throw off the paralyzing conventionality of servile imitation, and tried hard to get back to nature, and some of his sculptures in Pisa are wonderful for expression. He was the pioneer where followed the great Donatello. Pisano's son worked in the same direction as his father, and has left some wonderful architectural monuments and sculptures, but his fame rests chiefly on his architectural works, with which we are not here concerned. Andrea and Nino Pisano made great strides towards truth and naturalness, and so paved the way for the great man to come. They were immediately followed by Ghiberti, who spent many years of his life in working at the well-known mighty doors of the baptistery at Pisa. These great gates, however, show no subtlety of the sculptor's art. Tonality there is none; the whole is rather a kind of emblematic picture-writing than sculpture, but Ghiberti says he spent his time in "studying nature and investigating her methods of work," so that even though he did not succeed, nature was his watchword. But all these sink into insignificance before the mighty name of Donatello. Like all true and great artists, Donatello appreciated the limits of his art, made naturalism his watchword, and followed his principles with sincerity. Whilst we are now writing, the wonderful low relief of St. Cecilia, which is on view at Burlington House, is fresh in our mind. There is the work in dark marble, looking as fresh, beautiful, lifelike, and artistic, as it did the day it left the artist's

Niccola Pisano.

Andrea and Nino Pisano.

Ghiberti.

Donatello.

hand. What simplicity, what truth of impression, and what subtle tonality is there seen! Those who remember this masterpiece may have noticed the way in which the outline of the neck is raised, and how untrue it looked close to; but at a distance the impression was perfect, and the suggestion of shadow most beautifully rendered. That the modelling of the mouth is feeble is obvious, but where is perfection? Casts of this work can be had for a mere trifle from Bunciani, Covent Garden, and we strongly recommend those who have not seen the original to get one, for a suggestion of such work is better than a gallery of trash. There is another fine specimen of Donatello's work in low relief at South Kensington, but in that there is the mark of the allegorical, and it just misses the distinguished and simple character of the St. Cecilia. We do not care for his Judith and Holofernes, though it is one of the most noted of his works, and owes its renown more to its historical association than to its artistic qualities. Where Donatello relied on nature, however, his work is unsurpassed for truth and subtlety. It was natural that such a great man should have many followers, but, like most imitators of genius, they copied his bad points and none of his good ones, for these they could not attain to, not being geniuses themselves. The wonderful medals of Vittore Pisano or Pisanello must not be forgotten, as they are well worthy of study. The student can get casts of most of these for a trifling sum, and we strongly recommend him to buy a few of Pisanello's works.

Vittore Pisano.

The work of the Della Robia family is so well known that we must touch upon it, although for most of it we care little or nothing, the medium, a glazed terra-cotta, being unnatural. Lucca, the greatest of the family, worked, however, at first in marble. Here and there in his work one meets with a beautiful face, and often with fine expressions, but the whole lacks simplicity and fineness. He was more a decorative artist than a sculptor.

Della Robia.

Of Michael Angelo we have spoken. Benvenuto Cellini, a name well known, was a great master in gold-working, but hardly a sculptor. Many lesser names

M. Angelo. Cellini.

follow, but no immortal is again seen in Italy; for though Canova made a name of some sort, he was no master. After Michael Angelo came imitation and decline. Neglect of nature, together with patronage, killed the spark of art, and so thoroughly killed it that even writers on art who had no art-training were listened to, as Winklemann and Lessing, but their work only produced an artificial afflatus, as Canova and Thorwaldsen proved, for both were small men, false in sentiment, and with little or no insight into nature. We say this advisedly, after seeing much of Canova's work and nearly all that of Thorwaldsen. There is no nature in their works, but puerile realism which is still in vogue in Italy to-day in such work as a Pears delights in, "You Dirty Boy" and other trivialities. England, Spain, Holland, and America seem, up to the present, not to have produced a single sculptor, but, in our humble opinion, the young sculptors of England will lead the way in the twentieth century, and the world may look for the advent of an immortal master and for work which will surpass the Greeks. At present France leads the way, and has some strong men in Jouffrey, Aubé, Falguière, Rodin; but there, too, the tendency seems to be towards a fumbling realism and petty *motif*. There is much talk of French sculpture being in advance of French painting. We do not believe it, and we feel that England is at present the only country where there is any distinct and original school of sculpture, with such modellers as Gilbert and Onslow Ford, and with such a sculptor as Havard Thomas, to say nothing of younger men, the outlook is very bright indeed.

Canova.

Thorwaldsen.

Modern French sculptors.

Future of English sculpture.

Final advice.

And now we must end the chapter with the final advice to the student to study deeply all good examples of the great artists whose work we have noted, and to leave all others alone. By and by the student will find that he is in a position to compare the good with the bad, then will it be time enough for him to look at the second-rate work, much of which contains fine passages here and there and special merits of its own; but these cannot be appreciated until the student has considerable know-

ledge, and that is only to be obtained by a serious study of nature and of the work of the best masters here cited.

Finally, we think we have shown that "Naturalism" has been the watchword of all the best artists, and that, after all, there are but few artists in any age. Many painters and modellers and sculptors there be, but artists are few indeed. One point which has impressed us in the inquiry into naturalistic art is the curious regularity with which so-called "imaginative" painters have appeared and made reputations for themselves in the after-glow, so to speak, of the setting sun of naturalism. It would appear that painters who have lived in an age of strong men have got fairly staggered by the good naturalistic work of their age, and have instinctively felt that, being no match for the great masters on their own lines, that their only way to fame and fortune is by eccentricity, and in *assuming* a superior tone of culture by the production of allegorical or classical inanities. The uneducated of their own generation, thoroughly tired of a naturalism whose aim they have never understood, hail with delight any novelty or new departure, and they praise puerility and falseness of colour as colour, false drawing as idealizing, conventional composition as original, the conventional and modern treatment of draperies beneath which no anatomy is discernible as an idealized and poetic treatment of drapery, and finally, in the subject of the picture they often mistake sentimentality for sentiment and sentiment for poetry. Thus these weaker men rise to fame, and many follow where they lead. But the generation which gave them fame dies, and a new generation, which has forgotten the triumph of the naturalistic masters of the past generation, wearies of them, and naturalistic work is again appreciated. The story of art seems to us like the mercury in a barometer, ever oscillating upwards and downwards, ever up towards the acme of naturalism, and ever down towards the abyss of conventionality and classicism. If we mentally map out the readings of this barometer on a chart, we shall find naturalism triumphant as the apex of each curve, whilst in the ascending curve will be found the strugglers

Barometer of naturalism.

towards naturalism, and in the descending curve the fallers away from naturalism. On the apices of these curves will be found triumphant the masters, such as the sculptors of the Egyptian lions, the sculptors of the Assyrian lion-hunts, Pheidias, Van Eyck, Durer, Holbein, Da Vinci, Titian, Velasquez, Donatello, Rembrandt, De Hooghe, Corot, Millet, and Gainsborough.

The masters.

CHAPTER III.

PHENOMENA OF SIGHT, AND ART PRINCIPLES DEDUCTED THEREFROM.

Introduction.

HAVING thus demonstrated that the best artists have always tried to interpret nature, and express by their art an impression of nature as nearly as possible similar to that made on the retina of the human eye, it will be well to inquire on scientific grounds what the normal human eye really does see.

The argument.

Our contention is that a picture should be a translation of a scene as seen by the normal human eye. That the impression will vary with individuals, there is no doubt, for the artist will see subtleties never dreamed of by the commonplace or uneducated eye, and his aim will, of course, be to portray those subtleties in his picture, and hence one source of individuality in a work, the other being in the way in which it is done. Our task now shall be to examine into the physical, physiological and psychological properties of the human eye, and to arrive at a conclusion, in so far as science allows us, as to how the normal eye does see things. The student will do well to read Chapter II. of Book III. of Dr. Michael Foster's "Text Book of Physiology," as well as the matter on the eye in Ganot's Physics, before going any further in this chapter, for we do not wish to go over ground which has been occupied previously, our aim being to give a view from the artistic standpoint of the physical, physiological, and psychological properties of eyesight. We will, then, proceed to consider how well we see external nature, that is, within what limits, for we never see her exactly as she is, as we shall show.

Optic nerves.

To begin with, then, the second pair of nerves is strictly reserved to respond to the vibrations of ether

—called light. If the student has ever had a blow on his eye, he has probably *seen* "stars," because every stimulus to this pair of nerves makes us see things, and not feel them. Now each sense has certain limits between which it can detect subtle vibrations, but beyond which all is blank. The more refined the organization of the person, the greater will be the number of vibrations he can distinguish. Thus 399,000,000,000 vibrations in a second produce in us the sensation of light, above this the vibrations appear as spectral colours until the number 831,000,000,000,000 is reached; to an increase in the number of vibrations above that number the optic nerve does not respond. Now the eye is an optical apparatus fixed between the optic nerve and the ether, not that we may perceive light, for we could do that without the eye, but that we may distinguish objects. The glyptic and pictorial arts are founded entirely on the sense of sight as music is founded on the sense of hearing. In the pictorial arts, then, we must clearly distinguish between the physical, physiological, and psychological properties of sight.

Le Conte's division.

Le Conte divides the scientific, i.e. physical and physiological data, into: A. Light; B. Direction of Light; C. Intensity; D. Colour; and the psychological data into Binocular vision, size, solidity, and depth. Following up Le Conte's scheme, let us begin, then, to discuss briefly the scientific data, that is, considering the apparatus purely from the standpoint of physics and physiology.

Light.

A. Light.

I. Physical characters of the eye as an optical instrument.

If a ray of light passes through a small hole into a darkened room (pin-hole camera), an image is formed of the object or objects without. The condition of a good definition of the image is that "all the rays from each point on the object must be carried to its own point on the image." If this hole be enlarged, this condition is impossible, and the light spreads over certain areas called diffusion areas or diffusion circles. In other

words, widely different rays and contiguous rays become mixed. To admit more light a lens is used in the eye, and by the photographer, for although it is possible (by pin-hole camera) to take pictures without a lens, the light so admitted is necessarily so limited that the exposure needed is too long. The lens, however, helps us by admitting more light, and at the same time giving better definition, but it also introduces many disadvantages and sources of error. Now a *theoretically* perfect physical image has been described by physicists as being both bright and sharp in definition, but the theoretically perfect image does not exist; for, apart from other considerations, the lens which we use to get microscopic sharpness, cuts off light, and the sharper the image is rendered by stops, the less brightness do we get. Thus we see the lens introduces scores of errors as well as desirable qualities.

In the human and photographic lenses the chief faults are:—

Dispersion. All refraction or bending of light by a lens is accompanied by dispersion. This error is corrected in opticians' lenses to a great extent. In the human lens, however, this fault is in some degree present, as can be proved by looking at a lighted street lamp through a violet glass, when a red flame will be seen surrounded by a bluish-violet halo. What, then, is the effect of dispersion on our theoretically perfect image? It is blurring of the sharpness of outline, since the size and position of the optical images thrown by the differently bent rays is not the same. Dispersion.

A lens having a spherical surface bends the rays so that they do not all come to a focus at the same point. What is the effect of this on our theoretically perfect image? Again it is blurring of the sharpness of outline. It is said the spherical aberration in a perfectly corrected optician's lens *is less than that in the lens of the human eye.* This must be remembered in connection with our later remarks. In the lower animals, spherical aberration is nearly absent. Their vision therefore is more periscopic, and therefore more like that of an optician's lens. Spherical aberration.

Astigmatism.

This defect can be avoided in the optician's lens, but it exists in, and is a serious fault of, the human eye.

Helmholtz considers the amount of spherical aberration unimportant as compared with this defect. Astigmatism is the result of imperfect symmetrical curvature of the cornea and of imperfect centering of the cornea and lens. This defect is found in most human eyes.

Astigmatism prevents the eye seeing vertical and horizontal lines at the same distance perfectly clearly at once. The defect in centering also causes irregular radiation, so that, as Helmholtz says, "The images of an illuminated point as the human eye brings them to focus, are inaccurate." What is the effect of those defects on the "perfect image"? Dimness of outline and detail in the textures of objects seen.

Turbidity.

The optician's lens is made of pure glass, the media of the human eye are not clear, but slightly turbid, so that Helmholtz says, "The obscurity of dark objects when seen near very bright ones depends essentially on this defect. This defect is most apparent in the blue and violet rays of the solar spectrum; for then comes in the phenomena of fluorescence to increase it." By fluorescence is meant the property which certain minutely divided substances possess of becoming faintly luminous, so long as they receive violet and blue light. The bottles filled with solution containing quinine, which look blue in the chemists' windows, owe their colour to this fact, as also does the blueness of "London" milk. These defects, combined with entoptic impurities which are constantly floating about in the humours, all help to detract from the brightness and sharpness of the "perfect image."

Fluorescence.

Blind spot.

This is a portion of the retinal field with no cones or rods, and therefore insensitive to light. This causes a gap in the field of vision. "This blind spot is so large that it might prevent our seeing eleven full moons if placed side by side, or a man's face at a distance of only six or seven feet," says Helmholtz. In addition to this, there are lesser gaps in the retinal field, due to the cutting off of light by the shadows thrown by the blood

vessels. Any one who has examined the retinal field with an ophthalmoscope knows what this means.

In addition to this the *macula lutea* is less sensitive to weak light than other parts of the retina. The effect of all these imperfections is to blur and dull the perfect image. The serious defects due to the blind spot are not noticed, according the Helmholtz, because "we are continually moving the eye, and also that the imperfections *almost always affect those parts of the field to which we are not at the moment directing our attention.*" The italics are ours. Here, then, is another great difference between the eye and the optician's lens. Macula lutea.

The eye in a passive state is adjusted to the most distant objects. It focusses for nearer objects by contracting the ciliary muscle which pulls tight the zonule of Zinn and so curves the crystalline lens. It can focus thus up to within five inches of itself, but the changes in the eye are almost imperceptible beyond twenty feet. Now a theoretically perfect eye might form perfect images of objects at infinite distances under special circumstances. But as has already been shown, it is very imperfect, and its images are not therefore perfect, and it could not form theoretically perfect images, even if the atmosphere were pure ether and nothing else, for there are other facts in nature which prevent this; thus we cannot see a sharp image of the sun with the naked eye on account of its dazzling brightness. Focussing

This central spot is a most important factor in the study of sight and art. For though the field of vision of the two eyes is more than 180° laterally, and 120° vertically, yet the field of distinct vision is but a fraction of this order, as we can all prove for ourselves. Now the field of distinct vision depends on the central spots for this reason. This central spot differs anatomically from the rest of the retina by the absence of certain layers which we need not mention here. Fovea centralis.

The absence of these layers exposes the bacillary layer to the direct action of light. Helmholtz says "all other parts of the retinal image beyond that which falls on the central spot are imperfectly seen," so that the

image which we receive by the eye is like a picture minutely and elaborately finished in the centre, but only roughly sketched in at the borders. But although at each instant we only see a very small part of the field of vision accurately, *we see this in combination with what surrounds it, and enough of this outer and larger part of the field, to notice any striking object, and particularly any change that takes place in it.*" If the objects are small, they cannot be discerned with the rest of the retina, thus, to see a lark in the sky, Helmholtz says it must be focussed on the central spot. Finally he says, "To *look* at anything means to place the eye in such a position that the image of the object falls on the small region of perfectly clear vision. This we may call *direct* vision, applying the term *indirect* to that exercised with the lateral parts of the retina, indeed with all except the central spot." Again, he says, "Whatever we want to see we look at and see it accurately; what we do not look at, we do not as a rule care for at the moment, and so do not notice how imperfectly we see it." Now all this is most important in connection with art, as we shall show later, we must beg the student therefore to hold it fast.

Direct and indirect vision.

It will from all this be seen that a perfect periscopic image is never seen by the eye of man, though in the lower animals the matter may be different.

B. Direction of Light.

Law of projection.

Le Conte says, "The retinal image impresses the retina in a different way; this impression is then conveyed by the optic nerve to the brain, and determines changes there, definite in proportion to the distinctness of the retinal image, and then the brain or the mind refers or projects this impression outward into space as an *external image, the sign and facsimile of an object* which produces it." Not only does this hold good of external images, but in certain diseases retinal impressions arising from within are projected outwards, thus ghosts are *seen*.

Corresponding points, &c.

"From Müller's law," Le Conte further says, "it is

evident that each point—every rod or cone—in the retina has its invariable correspondent in the visual field, and *vice versâ*."

Law of visible direction.

Le Conte's law of visible direction states that, "Where the rays from any radiant strike the retina the impression is referred back along the ray line (the central ray of the pencil) into space, and therefore to its proper place."

From these laws we understand why we see things in the relative positions which they occupy in space.

All the previous remarks are applicable to monocular vision.

C. Intensity.

Intensity.

A quotation from Helmholtz will best illustrate this point. He says, "If the artist is to imitate exactly the impression which the object produces on our eye, he ought to be able to dispose of brightness and darkness equal to that which nature offers. But of this there can be no idea. Let me give a case in point. Let there be in a picture-gallery a desert scene, in which a procession of Bedouins, shrouded in white, and of dark negroes, marches under the burning sunshine; close to it a bluish moonlight scene, where the moon is reflected in the water, and groups of trees, and human forms, are seen to be faintly indicated in the darkness. You know from experience that both pictures, if they are well done, can produce with surprising vividness the representation of their objects; and yet in both pictures the brightest parts are produced with the same white lead, which is but slightly altered by admixtures; while the darkest parts are produced with black. Both being hung on the same wall, share the same light, and the brightest as well as the darkest parts of the two scarcely differ as concerns the degree of their brightness.

How is it, however, with the actual degrees of brightness represented. The relation between the lightness of the sun's light, and that of the moon, was measured by Wollaston, who compared their intensities with that of the light of candles of the same material. He thus

found that the luminosity of the sun is 800,000 times that of the brightest light of a full moon.

An opaque body, which is lighted from any source whatever, can, even in the most favourable case, only emit as much light as falls upon it. Yet, from Lambert's observations, even the whitest bodies ouly reflect about two-fifths of the incident light. The sun's rays, which proceed parallel from the sun, whose diameter is 85,000 miles, when they reach us, are distributed uniformly over a sphere of 195 millions of miles in diameter. Its density and illuminating power is here only one-forty-thousandth of that with which it left the sun's surface; and Lambert's number leads to the conclusion that even the brightest white surface on which the sun's rays fall vertically, has only the one-hundred-thousandth part of the brightness of the sun's disk. The moon, however, is a grey body, whose mean brightness is only about one-fifth that of the purest white.

And when the moon irradiates a body of the purest white on the earth, its brightness is only the hundred-thousandth part of the brightness of the moon itself; hence the sun's disk is 80,000 million times brighter than a white which is irradiated by the full moon.

Now, pictures which hang in a room are not lighted by the direct light of the sun, but by that which is reflected from the sky and clouds. I do not know of any direct measurements of the ordinary brightness of the light in a picture-gallery; but estimates may be made from known data. With strong upper light, and bright light from the clouds, the purest white on a picture has probably 1-20th of the brightness of white directly lighted by the sun; it will generally be only 1-40th, or even less.

Hence the painter of the desert, even if he gives up the representation of the sun's disk, which is always very imperfect, will have to represent the glaringly lighted garments of his Bedouins with a white which, in the most favourable case, shows only the 1-20th part of the brightness which corresponds to actual fact. If he could bring it, with its lighting unchanged, into the

desert near the white there, it would seem like a dark grey. I found, in fact, by an experiment, that lamp-black, lighted by the sun, is not less than half as bright as shaded white in the brighter part of a room.

On the picture of the moon the same white which has been used for depicting the Bedouins' garments must be used for representing the moon's disk, and its reflection in the water; although the real moon has only one-fifth of this brightness, and its reflection in water still less. Hence white garments in moonlight, or marble surfaces, even when the artist gives them a grey shade, will always be ten to twenty times as bright in his picture as they are in reality.

On the other hand, the darkest black which the artist could apply would be scarcely sufficient to represent the real illumination of a white object on which the moon shone. For even the deadest black coatings of lamp-black and black velvet, when powerfully lighted, appear grey, as we often enough know to our cost, when we wish to shut off superfluous light. I investigated a coating of lamp-black, and found its brightness to be about one-hundredth that of white paper. The brightest colours of a painter are only about one hundred times as bright as his darkest shades.

The statements I have made may appear exaggerated. But they depend upon measurements, and you can control them by well-known observations. According to Wollaston, the light of the full moon is equal to that of a candle burning at a distance of twelve feet. Now, assume that you suddenly go from a room in daylight to a vault perfectly dark, with the exception of the light of a single candle. You would at first think you were in absolute darkness, and at most you would only recognize the candle itself. In any case, you would not recognize the slightest trace of any objects at a distance of thirteen feet from the candle. These, however, are the objects whose illumination is the same as that which the moonlight gives. You would only become accustomed to the darkness after some time, and you would then find your way about without difficulty.

If now, you return to the daylight, which before was perfectly comfortable, it will appear so dazzling that you will, perhaps, have to close your eyes, and only be able to gaze round with a painful glare. You see thus that we are concerned here not with minute, but with colossal, differences. How now is it possible that, under such circumstances, we can imagine there is any similarity between the picture and reality?

Our discussion of what we did not see at first, but could afterwards see in the vault, points to the most important element in the solution; it is the varying extent to which our senses are deadened by light; a process to which we can attach the same name, fatigue, as that for the corresponding one in the muscle. Any activity of our nervous system diminishes its power for the time being. The muscle is tired by work, the brain is tired by thinking, and by mental operations; the eye is tired by light, and the more so the more powerful the light. Fatigue makes it dull and insensitive to new impressions, so that it appreciates strong ones only moderately, and weak ones not at all.

But now you see how different is the aim of the artist when these circumstances are taken into account. The eye of the traveller in the desert, who is looking at the caravan, has been dulled to the last degree by the dazzling sunshine; while that of the wanderer by moonlight has been raised to the extreme of sensitiveness. The condition of one who is looking at a picture differs from both the above cases, by possessing a certain mean degree of sensitiveness. Accordingly, the painter must endeavour to produce by his colours, on the moderately sensitive eye of the spectator, the same impression as that which the desert, on the one hand, produces on the deadened, and the moonlight, on the other hand, creates on the untired eye of its observer. Hence, along with the actual luminous phenomena of the outer world, the different physiological conditions of the eye play a most important part in the work of the artist. What he has to give is not a mere transcript of the object, but a translation of his impression into another scale of sen-

sitiveness, which belongs to a different degree of impressibility of the observing eye, in which the organ speaks a very different dialect in responding to the impressions of the outer world.

In order to understand to what conclusions this leads, I must first explain the law which Fechner discovered for the scale of sensitiveness of the eye, which is a particular case of the more general *psycho-physical law* of the relations of the various sensuous impressions to the irritations which produce them. This law may be expressed as follows:—*Within very wide limits of brightness, differences in the strength of light are equally distinct, or appear equal in sensation, if they form an equal fraction of the total quantity of light compared.* Fechner's law.

Thus, for instance, differences in intensity of one-hundredth of the total amount can be recognized without great trouble, with very different strengths of light, without exhibiting material differences in the certainty and facility of the estimate, whether the brightest daylight, or the light of a good candle be used."

Herein, then, are contained the limits with which we can work, and the physiological reasons why we can render a fairly true impression of a scene in nature.

The only constant factor, then, is the *ratio of luminous intensities*,—that is, the picture must be as true as possible in relative tones or values. Obviously a picture of bright sunlight should look brighter in a moderately lighted room than the surrounding room, that is, its first impression on the observer should be as if he were looking at a landscape, beyond the walls, through the frame.

From these remarks it will be seen how utterly impossible it is to render truly a bright sunlight scene, for if the values be true, starting from the top of the scale, the highest light, when you get to the middle tints, they are too black already, and the picture is out of tone and false. Obviously the right way is to start from the lower end of the scale, the *darks*, and get them as true as possible, and let the lights take care of themselves; but more of this anon.

D. Colour.

Colour.

As photographers, the matter of colour exercises us but indirectly, still the subject should be understood, on account of its bearing on painting. "Colour perception," says Le Conte, "is a single perception, and irresolvable with any other. It must, therefore, have its basis in retinal structure."

Helmholtz divides the vibrations of ether known as light into three degrees. He says the longest and shortest rays "do not essentially differ in any other physical property," except that we distinguish them from the intermediate waves. Thus the ear can receive at once many waves of sound or notes, and they remain distinct, but notes of colour do not keep distinct in the same way, "so that the eye is capable of recognizing few differences in quality of light," says Helmholtz, and can only perceive the elementary sensation of colour by artificial preparation. He also says, the only bond between the objective and subjective phenomena of colour may be stated as a law thus, "Similar light produces under like conditions a like sensation of colour. Light, which under like conditions, excites unlike sensations of colour is dissimilar;" what we want in art, then, is the *appearance* of the phenomena. The illumination of the sun's rays cannot be weakened without at the same time weakening their heating and chemical action; this is a point to be remembered in exposure.

Colour is, of course, excited by the length of the waves and their frequency, red being the longest and slowest, and they diminish in the order of the spectrum through orange, yellow, green, violet, indigo, to the shortest waves which produce the effect of blue, the whole combined forming white. Now, Hering has shown that there are only four primary colour sensations, though he at one time included black and white, thus making six. The four are red, yellow, green, and blue, which are reduced by him to two complementary colours, red and green, and yellow and blue.

Difference of colour.

All objective differences between colours, according

to Helmholtz, may be reduced to differences of tone, difference of fulness (saturation), and difference of brightness.

By tone, or hue, he means in fact difference of colour. As in the spectral colours, he here refers to the vibration on a tonic scale. Fulness is greatest in the pure tints of the spectrum, and becomes less in proportion as they are mixed with white light. All compound colours are less full than the simple tints of the spectrum.

Brightness is strength of light, or amount of illumination.

In nature black and white must be included among the primary colours when *quality* is spoken of, as light acts on black and white.

All differences of tone, therefore, are the result of combinations in different proportions of the four primary colours.

Among the defects of the eye in seeing colour, Helmholtz says, "All are red blind at the innermost portion of the field of vision, all red colours appear darker when viewed indirectly."

The furthest limit of visible field is a narrow zone, in which all distribution of colour ceases, and there only remain differences of brightness. Probably those nervous fibres which convey impressions of green light are alone present in this part of the retina. The yellow spot makes all blue light appear somewhat darker in the centre of the field.

All these inequalities are known and more or less rectified by constant movement. As the eye becomes fatigued by bright light, so that it cannot at first answer to delicate stimulus, so it can become partially fatigued for certain colours.

Fatigue weakens the apparent illumination of the entire field of vision.

The colour of illumination of a picture, too, varies greatly by effect of local colour.

What is constant in the colour of an object is not the brightness and colour of the light which it reflects, *but the relation between the intensity of the different-coloured*

constituents of this light, on the one hand, and that of the corresponding constituents of the light which illuminates it on the other. For example, white paper in full moonlight is darker than black satin in daylight, or a dark object with the sun shining on it reflects light of exactly the same colour, and perhaps the same brightness, as a white object in shadow. Grey in shadow looks like white.

Brightness of local colour diminishes with the illumination or as the fatigue of the retina is increased. In sunshine, local colours of moderate brightness approach the brightest, whereas in moonlight they approach the darkest. Pictures to be seen in daylight do not admit of difference of brightness between sun and moon. As colours increase in brightness, red and yellow become apparently stronger than blue. Painters make yellow tints predominate when representing landscape in full sunshine, while moonlight scenes are blued. Helmholtz says:—"Differences of colour which are actually before our eyes are more easily apprehended than those which we only keep in memory, and contrast between objects which are close to one another in the field of vision are more easily recognized than when they are at a distance. All this contributes to the effect. Indeed, there are a number of subordinate circumstances affecting the result which it would be very interesting to follow out in detail, for they throw great light upon the way in which we judge of local colour; but we must not pursue the inquiry further here. I will only remark that all these effects of contrast are not less interesting for the scientific painter than for the physiologist, since he must often exaggerate the natural phenomenon of contrast in order to produce the impression of greater varieties of light and greater fulness of colour than can be actually produced by artificial pigments."

Again, when turbidity is composed of fine particles its appearance is blue, as the mists seen in autumn hanging round coverts, but it is whiter than the aërial blue because of the colour of the covert behind. When this turbidity is absent the colours are brighter, hence the fierce blue on bright sunshiny days with easterly winds. This

matter of turbidity must not be forgotten in portrait work; it is this which helps to give relief, hence the absurdity of all photographers' devices, the object of which is to minimize this turbidity. In addition to these is the ever-changing effect of atmosphere on colour, that subtle medium with which the enchantress Nature produces ever-changing effects, and its chief effect on colour is to lower it in brightness. *Atmosphere greys all things,* hence on a misty day all the colours are greyed—we have, in fact, a "grey day."

Another point which must not be forgotten is that with bright illumination bright objects become more like the brightest, and with feeble illumination dark objects become more like the darkest. This is a very important matter, for it means that in bright sunshine the lightest greys are lost in white, whilst in dull weather the darkest greys are lost in black, hence the falsity of having deep blacks in brightly-lighted landscapes, and as has been shown, these are untrue, and the result of ignorance and of faulty manipulation. As Helmholtz has it, "The difference of brightness and not absolute brightness; and that the differences in them in this latter respect can be shown without perceptible incongruity if only their graduations are imitated with expression."

E. Binocular Vision—Psychological Data.

Single Image.

Binocular Vision.

The remarks already made would apply equally well to man if he were a one-eyed animal, but we find there are other considerations to take into account since man is two-eyed. Now the phenomena of binocular vision cannot be treated of with such accuracy as the physical and physiological facts already discussed. In this subject we shall follow Le Conte. It is obvious there is a common binocular field of view for the two eyes. Now Dr. Le Conte shows us that we see all objects double, except under certain conditions. When we look directly at anything, then we see it clearly, but all things nearer to

us than the object looked at and beyond it, are seen double, or blurred and indistinct. This is the case in life, as can be proved.

He goes on to tell us that we see things singly when the two images of that thing are projected outward to the same spot in space, and are therefore superimposed and coincide. Objects are seen single when their retinal images fall on corresponding points—that is, objects lying in a horizontal circle passing through the point of sight and the central spots are seen single. Now "all objects at the same or nearly the same distance, but a little to the right or left, or above or below, are also either seen single, or else the doubling, if any, is usually imperceptible." This surface of single vision is called the *horophter.*

There are, then, two adjustments, the focal and the axial, the one an adjustment for distant vision, the other for single vision, and connected with these is the adjustment of the pupil, which contracts and expands, not only to light, but also to distance and nearness of the object. Therefore, three adjustments take place when we look at anything. Connected with these laws are the laws of direction and corresponding points. Thus we see our perfect image can only exist in one place at once, that all between the eye and the object and beyond the object is indistinct, and that the further off an object is the more luminous does it appear. Two objects, too, may be seen as one.

F. Perspective.

Depth, Size, and Solidity.

Perspective.

The next question is, "To what is due the appearance of solidity and depth?"

Depth, or relative distance, is judged of by a combination of four kinds of perspective.

1. *Focal or monocular perspective.*—Objects at the point of sight are sharp, but all objects beyond or within this distance are dim. Distance is judged partly by the act of focussing the eye by acting, as we have said, on the lens.

As this power only acts within twenty feet, it is evident that things can only be in focus in one plane.

2. *Mathematical Perspective.*—Objects become smaller in appearance and nearer together as they recede. This is another aid to the judging of distance. The true rendering of this perspective in photography depends on the correct use of the lens, as will be explained.

3. *Aërial Perspective* is the perspective due to the scattering of light by aërial turbidity, for the atmosphere always contains floating particles of matter. As the objects recede this curtain of turbidity becomes thicker and the distant objects grow dimmer and bluer. This is another aid to the judging of distance, but any one not accustomed to count on this effect may easily misjudge, as we have done before now to our cost in Switzerland, where a peak miles away at times seemed to be in the next valley.

4. *Binocular Perspective* is due to the convergence of the optic axes and formation of a single image. Le Conte says, "The perspective of depth or relative distance, whether in a single object or in a scene, is the result of the successive combinations of the different parts of the two dissimilar images of the object on the scene." Binocular perspective, too, gathers together the imperfect retinal impressions when the eye sweeps over the field of view. This only acts within a few hundred yards.

Thus, then, in taking a photograph we must remember that theoretically speaking, up to twenty feet the picture can be made sharper all over than beyond that distance; for the eye has all these perspectives acting within that distance.

By size we estimate distance. Size.

Solidity is judged by binocular vision and lighting. Solidity.

When to all these difficulties are added those dependent on the subtleties of light reflected into shadow, and the thousand-and-one changes of colour due to the numerous shadows cast by objects in nature, we get a complexity which forces upon us how impossible it is for man to *copy* nature. A "mere transcript of nature," which is so glibly talked of, is, humanly speaking, an impossibility. No man ever painted a "mere transcript" of nature, or

a truthful copy, any more than a man can make plants or animals in a laboratory; but he can, by a picture, give a truthful impression of nature.

On these data and within these limits, then, must we work, and here we append a few general principles deduced from these data, which must guide us in our work. We have followed them ourselves, and they form the scientific part of our creed of "Naturalistic Photography." We have said little upon the drawing of photographic lenses, as that is fully discussed in another chapter; but of course "Naturalistic Photography" claims as of vital importance that lenses be used so as to give the drawing of objects as seen by the eye—in other words, as drawn by a good draughtsman.

Art Principles Deducted from the Data Cited.

Art Principles.

We have shown why the human eye does not see nature exactly as she is, but sees instead a number of signs which represent nature, signs which the eye grows accustomed to, and which from habit we call nature herself. We shall now discuss the relation of pictorial art to nature, and shall show the fallacy of calling the most scientifically perfect images obtained with photographic lenses true. They are not true, as we have shown, and shall again show, but what is true is really what we have all along advocated; that is that the photographer must so use his technique as to render a true impression of the scene. The great heresy of 'sharpness' has lived so long in photographic circles because firstly the art has been practised by scientists, and secondly by unphilosophical scientists, for all through the lens has been considered purely from the physical point of view, the far more important physiological and psychological standpoints being entirely ignored, so that but one-third of the truth has been hitherto stated.

What a picture is.

To begin with, it must be remembered that a picture is a representation on a plane surface of limited area of certain physical facts in the world around us, for abstract ideas cannot be expressed by painting. In all the works in the

world the painter, if he has tried to express the unseen or the supernatural, has expressed the unnatural. If he paints a dragon, you find it is a distorted picture of some animal already existing; if he paints a deity, it is but a kind of man after all. No brain can conjure up and set down on paper a monster such as has never existed, or in which there are no parts homologous with some parts of a living or fossil creature. We defy any man to draw a devil, for example, that is totally unlike anything in existence. All so-called imaginative works fall within the category of the real then, for they are in certain parts real because they are all based on realities, even though they may be utterly false to the appearance of reality. By this we mean that an ideal dragon may be based on existing animals; his form may be a mixture of a Cobra, Saurian, and a serpent, as is often the case; so far it may be real, but then the way in which it is painted may be utterly false, for the natural effect of light and atmosphere on the dragon may and probably will be ignored, for there is no such animal to study from. The modern pre-Raphaelites are good examples of painters who painted in this way; they painted details, they imitated the local colour and texture of objects, but for all that their pictures are as false as false can be, for they neglected those subtleties of light and colour and atmosphere which pervade all nature, and which are as important as form. Children and savages make this same error, they imitate the local colour, not the true colour as modified by light, adjacent colour, and atmosphere. But what the most advanced thinkers of art in all ages have sought for is the rendering of the true impression of nature.

Proceed we now to discuss the component parts of this impression.

Tone and Atmosphere.

When we open our eyes in the morning the first thing we see is light, the result of those all-pervading vibrations of ether. The effects of light on all the objects of nature and on sight have been dealt with in the beginning of this chapter, it only remains, therefore, to deduce our limits from these facts. In the first place, from what has been said in that section it is evident we cannot compete with painting, for

we are unable to pitch our pictures in so high a key as the painter does, and how limited is his scale has been shown, but by the aid of pigments he can go higher than we can. It has been shown, too, that it is impossible to have the values correct *throughout* a picture, for that would make the picture too black and untrue in many parts. This fact shows how wrong are those photographers who maintain that every photograph should have a patch of pure white and a patch of pure black, and that all the lighting should be nicely gradated between these two extremes. This idea arose, no doubt, from comparing photography with other incomplete methods of translation, such as line-engraving.

The real point is that the darks of the picture shall be in true relation, and the high lights must take care of themselves. By this means a truer tone is obtained throughout. Now to have these tones in true relation it is of course implied that the local colours must be truly rendered, yellow must not come out black, or blue as white, therefore it is evident that colour-corrected plates are necessary. But such plates are useless when the quantity of silver in the film is little, for the subtleties of delicate tonality are lost, which are not compensated for by gain in local colour, and this is a point the makers of orthochromatic plates must take into consideration. It will be seen now why photographs on uncorrected plates (even when the greatest care and knowledge in using them is exercised) are not, as a rule, successful, and why the ordinary silver printing-paper is undesirable, for it exaggerates the darkness of the shadows, a fatal error. False tonality destroys the sense of atmosphere, in fact, for the true rendering of atmosphere, a photograph must be relatively true in tone; in other words the relative tones, in shadow and half shadow, must be true. If a picture is of a bright, sunlit subject, brilliancy is of course a necessary quality, and by brilliancy is *not* meant that "sparkle" which so delights the craftsman. Of course the start of tone is naturally made from less deep shadows, when the picture is brightly lighted, for the black itself reflects light, and all the shadows are filled with reflected light. It will be seen,

therefore, that it is of paramount importance that the shadows shall not be too black, that in them shall be light as there always is in nature—more of course in bright pictures, less in low-toned pictures—that therefore the rule of "detail in the shadows" is in a way a good rough-and-ready photographic rule. Yet photographers often stop down their lens and cut off the light, at the same time sharpening the shadows and darkening them, and throwing the picture out of tone. It cannot be too strongly insisted upon that "strength" in a photograph is not to be judged by its so-called "pluck" or "sparkle," but by its subtlety of tone, its truthful relative values in shadow and middle shadow, and its true colouring. Photographers have been advised by mistaken craftsmen to spot out the "dotty high lights" of an ill-chosen or badly-rendered subject to give it "breadth." Such a proceeding of course only increases the falsity of the picture, for the high lights, as we have shown, are never high enough in any picture, and if a man is so unwise as to take a picture with "spotty lights," he is only increasing his display of ignorance by lowering the high lights, which are already not high enough. This does not of course apply to the case where a single spot of objectionable white fixes the eye and destroys harmony, but to the general habit of lowering the high lights in a "spotty" photograph. Spotty pictures in art as well as in nature are abominations to a trained eye, and it is for that very reason that such subjects are more common among photographers who are untrained in art matters than in the works of even third-rate painters. The effect of the brightest sunlight in nature, for reasons explained, is to *lessen* contrast, the effect of a sharply-focussed, stopped-down photograph is to *increase* contrast in the subject and thus falsify the impression. As the tendency of "atmosphere" is to grey all the colours in nature more or less, and of a mist to render all things grey, it follows that "atmosphere" in all cases helps to give breadth by lessening contrast, as it also helps to determine the distance of objects. As shown in the previous chapter, this aërial "turbidity," by which is

meant atmosphere, takes off from the sharpness of outline and detail of the image, and the farther off the object is, the thicker being the intervening layer of atmosphere, the greater is the turbidity *cæteris paribus*, therefore from this fact alone objects in different planes are not and should not be represented equally sharp and well-defined. This is most important to seize—as the prevalent idea among photographers seems to be that all the objects in all the planes *should be sharp at once*, an idea which no artist could or ever did entertain, and which science at once proves to be untenable. The atmosphere in the main rules the general appearance of things, for if this turbidity be little, objects look close together, and under certain other conditions are poor in quality.

Drawing and Lighting.

In addition to tone and atmosphere, the diminished drawing of objects as they recede from us (mathematical perspective) helps to give an idea of distance, but by choosing a suitable lens, which does our drawing correctly, we need not regard this matter of drawing. A minor aid to rendering depth is the illumination of the object, a lateral illumination giving the greatest idea of relief, but the photographer should be guided by no so-called "schemes of lighting," because, for more important reasons, it may be advisable to choose a subject lighted directly by the sun, or silhouetted against the sun. All depends on what is desired to be expressed. For example, an artist may wish to express the sentiment and poetry of a sunset behind a row of trees. Is he to consider the minor matter that there will be little relief, and it is not a good "scheme of lighting"? No, certainly not, otherwise he must forgo the subject. Nature ignores all such laws. The only law is that the lighting must give a relatively true translation of the subject expressed, and that a landscape must not be lighted by two or more suns. In portrait work, even, it must be remembered that the aërial lighting must stand out against the background, for in all rooms there is a certain amount of turbidity between us and distant objects.

On the Impression.

The reason we prefer pictures which are not too bright lies in the fact that the eye cannot look long at very bright

paintings without tiring. As a physical fact, too, the most delicate modelling and tonality is to be obtained in a medium light. From what has been previously said, it will now be understood that a picture should not be quite sharply focussed in any part, for then it becomes false; it should be made just *as sharp as the eye sees it and no sharper*, for it must be remembered the eye does not see things as sharply as the photographic lens, for the eye has the faults due to dispersion, spherical aberration, astigmatism, aërial turbidity, blind spot, and beyond twenty feet it does not adjust perfectly for the different planes. All these slight imperfections make the eye's visions more imperfect than that of the optician's lens, even when objects in one plane only are sharply focussed, therefore, except in very rare cases, which will be touched upon elsewhere, the chief point of interest should be slightly—very slightly—out of focus, while all things, out of the plane of the principal object, it is perfectly obvious, from what has been said, should also be slightly out of focus, not to the extent of producing *destruction of structure* or fuzziness, but sufficiently to keep them back and in place. For, as we have been told, "to look at anything means to place the eye in such a position that the image of the object falls on the small region of perfectly clear vision, . . . and . . . whatever we want to see, we look at, and see it accurately; what we do not look at, we do not, as a rule, care for at the moment, and so do not notice how imperfectly we see it." Such is the case, as has been shown, for when we fix our sight on the principal object or *motif* of a picture, binocular vision represents clearly by direct vision only the parts of the picture delineated on the points of sight. The rule in focussing, therefore, should be, focus for the principal object of the picture, but all else must not be sharp; and even that principal object must not be as perfectly sharp as the optical lens will make it. It will be said, but in nature the eye wanders up and down the landscape, and so gathers up the impressions, and all the landscape in turn appears sharp. But a picture is not "all the landscape," it should be seen at a certain distance—the focal length of

Rule for focussing.

the lens used, as a rule, and the observer, to look at it thoughtfully, *if it be a picture,* will settle on a principal object, and dwell upon it, and when he tires of this, he will want to gather up *suggestions* of the rest of the picture. If it be a commonplace photograph taken with a wide-angle lens, say, of a stretch of scenery of equal value, most photographic landscapes, of course the eye will have nothing to settle thoughtfully upon, and will wander about, and finally go away dissatisfied. But such a photograph is no work of art, and not worthy of discussion. Hence it is obvious that panoramic effects are not suitable for art, and the angle of view included in a picture should never be large. It might be argued from this, that Impressionists who paint the horse's head and top of a hansom cab are correct, since the eye can only see clearly a very small portion of the field of view at once. We assert, no, for if we look in a casual way at a hansom cab in the streets, we only see *directly* the head of the horse and the top of the cab, yet, indirectly, that is, in the retinal circle around the *fovea centralis* we have far more suggestion and feeling of horse's legs than the eccentricities of the Impressionist school give us, for in that part of the retinal field indirect vision aids us. The field of indirect vision must be *suggested* in a picture, but subordinated. But we shall go into this matter later on, here we only wish to establish our principles on a scientific basis. Afterwards, in treating of art questions, we shall simply give our advice, presuming the student has already studied the scientific data on which that advice is based. All good art has its scientific basis. Sir Thomas Lawrence said, "Painting is a science, and should be pursued as an inquiry into the laws of nature. Why, then, may not landscape painting be considered as a branch of natural philosophy, of which pictures are but experiments?"

The Impressionists.

Sir T. Lawrence.

Fuzziness. Some writers who have never taken the trouble to understand even these points, have held that we admitted fuzziness in photography. Such persons are labouring under a great misconception; we have nothing whatever to do with any "fuzzy school." Fuzziness, to us, means

destruction of structure. We do advocate broad suggestions of organic structure, which is a very different thing from destruction, although, there may at times be occasions in which patches of "fuzziness" will help the picture, yet these are rare indeed, and it would be very difficult for any one to show us many such patches in our published plates. We have, then nothing to do with "fuzziness," unless by the term is meant that broad and ample generalization of detail, so necessary to artistic work. We would remind these writers that it is always fairer to read an author's writings than to read the stupid constructions put upon them by untrained persons.

BOOK II.

TECHNIQUE AND PRACTICE.

"Artists are supposed to pass their lives in earnest endeavour to express through the medium of paint or pencil, thoughts, feelings, or impressions which they cannot help expressing, and which cannot possibly be expressed by any other means. They make use of material means in order to arrive at this end. They tell their story —the story of a day, an impression of a character, a recollection of a moment, or whatever, more or less clearly or well, as they are more or less capable of doing. They expose their work to the public, not for the sake of praise, but with a feeling and a hope that some human being may see in it the feeling that has passed through their own mind in their poor and necessarily crippled statement. The endeavour is honest and earnest, if almost always with a result weakened by over-conscientiousness or endeavour to be understood. . . . Your work is exhibited not with the intention of injuring any of the human race. It is a dumb, noiseless, silent story, told, as best it may be, by the author to those whom it may concern. And it does tell its story, not to *everybody*, but to *somebody*."

William Hunt.

CHAPTER I.

THE CAMERA AND TRIPOD.

The camera as used to-day is a modified form of the Camera Obscura adapted to the special end of taking photographs. It is essentially nothing but a light-tight box, to one end of which a lens can be adjusted, and to the other end of which the slide containing the sensitive plate can be applied and exposed, so that it receives no light, save that passing through the lens. There are many patterns and many minor differences in the construction of these boxes, some few of real value, but the majority the work of ingenious and speculating manufacturers, who hope by some novelty to attract a sale for their new patents. In all apparatus the student should choose the simplest and strongest, for in artistic work lightness *per se* is no object, nay, it may be harmful, as leading to over-production. In fact nothing should stand in the way of getting the best results, and though many of the cameras on the market are light and fitted with numerous devices which are said to simplify operations and help the worker, yet such is not really the case, and these thousand-and-one aids to work are apt to become deranged, and finally to embarrass the worker at some critical moment.

The camera.

Choice of camera.

In choosing a camera, then, for landscape work, choose a square one, with a reversing frame, a double swing-back, and good leather bellows. Let the flange of the lens be fitted to a square front which can be easily removed and replaced, and let there be a rising front. It is advisable to have the camera brass-bound for the sake of its preservation, and if for use in tropical climates the bellows

should be made of Russian leather, as the oil of birch with which the leather is cured is most distasteful to insects.

Special considerations in choosing a camera. Base-board. Thumb-screw.

In ordering a camera there are a few points which experience has led us to consider essential to comfort. One is that the part of the base-board of the camera which rests on the tripod head should be strengthened or made of much stouter material than is usually used. Another is that the thumb-screw should be of much larger diameter than is usually the case, and this should be borne in mind, even in the making of the smaller cameras, for on a windy day when the camera has a heavy lens on one end and a loaded double dark slide on the other, the vibration is often ruinous to the picture during exposure, while sudden gusts of wind may even crack the wood round the screw hole. It seems to us a thumb-screw at least half an inch in diameter should be used, unless the camera be made to fit into the tripod head, a method often adopted of recent years, and of course the best way of all. On more than one occasion we have nearly lost the camera altogether in the water when trying to screw it to the tripod when working from a boat on a tide-way, but by having a part of the base-board made to fit into a wooden tripod head, this at times most difficult operation is rendered easy and certain.

The camera should always extend and close by means of a tail-screw, those opening by means of a rack and pinion are much more liable to get out of order. Of course this remark is not applicable to the smallest-sized cameras.

Spirit levels.

Two small spirit-levels sunk into the tail-piece of the camera are invaluable.

Size of camera.

In ordering a camera the two vital points to be considered are the size including the length of the bellows. The size of plate you intend working with determines the size of the camera. We have worked with all sized cameras, from quarter-plate up to one taking twenty-four by twenty-two inch plates, and it is only after long experience and much consideration that we venture to offer an opinion on the size to be chosen. For ordinary work, then, we recommend the half-plate size as the minimum and the ten by eight inch size as the maximum. Perhaps a whole-plate camera is on the

whole as useful as any. The strength required to do a day's work with a twelve by ten inch camera is beyond any but a strong man. It is assumed, of course, that the pictures of the sizes cited are for albums, portfolios, or book illustrations. It must be remembered, however, that the size of a picture has nothing to do with its artistic value, an artistic quarter-plate picture is worth a hundred commonplace pictures forty by thirty inches in size. For producing pictures for hanging, however, we consider the camera should be between fifteen by twelve inches and twenty-four by twenty-two inches; we cannot imagine anything larger than twenty-four by twenty-two inches for out-door work, and our memory goes back to a marsh road in Norfolk where we and two peasants had all we could do to carry a twenty-four by twenty-two inch camera when set up, from one marsh to another.

Square cameras.

The student will of course remember that his camera must be square in order to have a reversing frame fitted, but that makes no difference to the dark slides. Having then fixed on the size of his camera, a question requiring the greatest thought, he must next tell the maker the length of bellows he requires, which is usually measured from front to back when the camera is racked out to its full length. As we recommend the use of long-focus lenses only, as will be seen in the chapter on lenses, and as no definite law can be laid down for this length, it is advisable to order a camera four or five inches longer than the focal length of the lens which is advertised to cover the next larger-sized plate to that which your dark slide holds.

Length.

Size of plate.

And now for a caution against a fallacy still current in photographic circles, which is that one size of plate is more suitable for pictorial purposes than another. Let no such nonsense influence you, the size of the plate has nothing whatever to do with success or beauty. Every composition will demand its own particular size and shape, and though you work with a ten by eight inch camera or any other size, you will find you will often take a nine by four inch or a ten by three inch plate or a dozen

other sizes and cut off all the rest. All fanciful rules for fixing on the size of a plate for pictorial reasons cannot be too strongly condemned. Such things must be left to the individuality of each artist, and every picture-gallery in Europe gives the lie to all rules for a choice of size. The artist, must of course, suit his canvas or plate to his subject, not his subject to his canvas or plate.

Studio cameras.

For studio, or indoor work, the camera may of course be heavier for obvious reasons, and a different form of support is necessary, the one usually adopted being very convenient for lowering or raising the lens so that the best point of sight is obtained according to the position of the model. It seems to us, however, that these studio cameras and stands are made a great deal too heavy and cumbersome. For this kind of work a very necessary part of the apparatus is a hood of some dark material fixed on to the front of the camera and extending above and beyond the lens, in order to obviate the effect of the numerous reflections always present in a glass studio. Out of doors this is only necessary when the sun is shining into the lens ; otherwise it is never needed, for we have tried it, and have proved that its use has in no way improved either the truth or the artistic quality of the negative. In cases where the sun shines into the lens a hat, a piece of cardboard, a folded newspaper, or anything of the kind, will answer the purpose equally well.

Hood.

Tripod head.

The tripod head should be preferably of tough wood covered with felt. A metal tripod head is apt to endanger the woodwork of the camera, even when covered with leather.

Tripods.

The legs should be simple and firm, the best we know of being made of two pieces of ash or oak hinged at the bottom, the points shod with iron, and the legs being stiffened, when in position by a bar of iron which is secured by a hinge. Every one should have two pairs of legs at least ; one pair, so that when the camera is set up the lens may be on a level with the eye of a man of average height, and one pair shorter, so that the lens is only three feet from the ground. In addition to these we always have handy three tough poles eight feet long

Supplementary poles.

and about the diameter of a broomstick; these are shod with iron heels, and have notches cut at the unshod ends. These are most useful to lash to the long legs when using them in water-ways. It is as well to have six double-backs, for by filling them all at one operation the student empties a box of plates, and so avoids a chance of mixing exposed and unexposed plates. The most convenient method of carrying the plates in all cases up to and including the ten by eight size, is to have a bag made which will take the camera, three double-backs and the focussing cloth, and a separate bag for the other three double-backs which can be left or taken out at pleasure.

Double-backs.

Bags.

A very useful piece of apparatus is a clamp which can be screwed on anywhere, but especially to a boat's gunwale, the taffrail of a steamer, a fence, and numerous other places whence good pictures can often be secured. Such a clamp can be purchased at most of the dealers' shops.

Having decided on these matters, we will suppose the novice is now provided with camera and tripod. Now for a few details about starting. In setting up the camera on its tripod, one leg should be placed either between the photographer's legs or exactly opposite to him, he will then find he can command the camera easily and alter its position with a touch. If, on the contrary, the legs are put up by chance, he will soon find his camera playing all sorts of gymnastic tricks, one moment looking up as if threatening the stars, the next studying with the deepest interest the ground at its foot.

Setting up the camera.

The manipulation of the rising front is a power needing considerable study, for, by moving it, you can regulate the amount of foreground you wish to include in your picture. The limit of rise of the front is determined by the manufacturer, and the limit beyond which the student must not go is determined by the covering power of the lens he is using, for of course he will remember that every lens only covers a certain circle, the diameter of the circle depending on the construction of the lens. The usual method of describing the covering power of a lens is to give the measurements of the greatest parallelogram

Rising front.

that can be inscribed in this circle. It will be easily seen that if the lens we use only just cover the plate, if the front be raised, the lower corners will have no image exposed on them, and the higher the lens is carried, the more of the lower part of the picture will be cut off. As the image is upside down, the blank corners will appear in the sky of the negative. It is then obvious that if the covering capacity of the lens is greater than needed for the plate used, the rising front may be used to a much greater extent than if you only use a lens advertised to cover the plate you are exposing.

Swing-backs.

The effect of the horizontal and vertical swing-back is identical, as is obvious if the camera be placed on its side, for the horizontal swing becomes vertical, and *vice versâ*. If the camera be set up plumb, the effect of using the vertical swing-back to its extreme limits (which are determined by the mechanical construction of the camera) is to lengthen objects in the direction of their obliquity and to sharpen them. What does this mean from an art point of view? It means that as a rule it throws the whole picture out of drawing, the relative positions of the planes are altered, the relative definition in the planes is altered and therefore the relative values, and therefore as a rule the picture, is artistically injured. This rule-of-thumb use of the swing-backs arose, no doubt, from the practice of those craftsmen, untrained in art, whose aim was the production of "sharp" pictures. The only legitimate extensive use of the swing-back is when the camera is tilted before an architectural subject, when it is quite correct to have the ground-glass plumb, although for our part we deem the tilting of the camera to be undesirable. The swing-backs can, however, be used, with the greatest caution, in artistic work, and their value can scarcely be overrated, but it requires great knowledge to use them appropriately. The subtle changes in the drawing and composition of a picture which can be obtained by an intelligent use of the two swing-backs, make them, to those who know how to use them, most valuable tools. But if the beginner will take our advice, he will keep his ground-glass plumb,

and his horizontal swing-back square, and never venture to alter either until he has thoroughly mastered his *technique*, and has some insight into the principles of art. The use of these swing-backs seems so easy, as of course it is, when "sharpness" is all the desideratum and embodiment of the operator's knowledge of art, but in reality none but artists know their real value. By their means, the *impression* of the whole scene can often be more truly rendered, and things can be subdued and kept back in the most wonderful manner; and since we wish to get a true *impression* of the scene we are interested in, not a realistic wealth of detail, it can be easily understood how invaluable are the swing-backs when used cautiously. Muybridge's galloping horses are in some of their movements true, but many of these are never seen by the eye, so quick are they. On the other hand, the student, if he goes to the British Museum, can see in the Parthenon Frieze that the sculptors in some cases carved the legs of the farthest off of three horses in higher relief than those of the nearer horses, but if he goes off a few paces and *views the carving in its entirety*, he will see the true impression is gained; the nearest legs look the farthest off, and so the work is true in impression, though not true in absolute fact. And though the use of the swing-back makes the drawing a little false, yet if the lens we shall describe hereafter be used, the falsity is so very slight as to be hardly noticeable, while it is *far more correct than any human hand guided alone by a human eye* can render it. With art as with science, nothing is absolutely correct, the personal equation and errors of experiment must be allowed for, but the results are true enough for working purposes.

On impression and fact.

By perforating a thin metal plate with a minute hole, large enough only to admit a pin point, and fitting it to the front of the camera in place of the lens, an image will be thrown on the focussing screen, as the piece of ground glass at the opposite end of the camera is called. If the image be received on to a sensitized plate, it will be impressed on the plate, and can be developed in the

Pin-hole photography.

ordinary way. Were it not for the great length of time required for exposure, it would be a great question whether any lens at all need be used in photography, but since the exposures required to produce pictures without lenses vary roughly from one to thirty minutes, this method cannot be seriously considered here, for, as we shall show, the quicker the exposure the better; nevertheless, the drawing of pictures taken in such way would obviously be correct. In cases where the length of exposure is immaterial, this method would be a worthy field for experiment.

Accidents to the camera.

The student must be careful to see that the inside of the camera is a dead black, and that it keeps so. At times the camera may leak or get out of register, that is, the plate does not exactly take the place of the ground glass, in which case he should at once send it to the maker. Should the student wish at any time to test the register of his camera, he has only to pin up a printed card and focus it as sharply as possible, using a magnifying glass, if one is at hand. Then load the dark-slide with a plate of ground-glass, and after sliding it into position, open the slide (if a double-back) when the image will be seen on the ground-glass plate, and its sharpness can be noted. If perfectly sharp, the camera is in register.

Test for register.

A good form of small camera to be carried in the hand is a great desideratum for artistic studies. Exquisite studies of figures, birds, and all sorts of animal life could be made with such a contrivance, studies admirably suitable for tail-pieces or illustrations to go in with the text. That there are dozens of patterns of hand cameras commonly called "detective cameras," we are well aware, and we have tried some of the best, but we have found none satisfactory for artistic purposes, and can therefore recommend none. We may here remark that the name "detective camera" is, in our opinion, undesirable, photographers ought not to have it even suggested to them that they are doing mean, spying work with their cameras, whereas the term "hand camera" meets every requirement. Of course the smaller cameras

Hand cameras.

advertised to be worn on the person are nothing but toys. The camera we should like to see introduced would be a very light collapsable camera, which could be easily carried in the pocket when not in use. It should be able to take pictures not larger than four and a half by three and a half inches, and should be fitted with the Eastman spools, so that any number of exposures could be made. The lens should be Dallmeyer's long focus rectilinear landscape lens, fitted with a good shutter. There should be a light view meter attached to the top. There is no necessity for a ground-glass screen, for on the tail-board could be registered various distances, at which the film is in focus ; and since for artistic purposes most of the studies would be of objects near at hand, this arrangement would be effectual.

CHAPTER II.

LENSES.

Optics.

We do not intend to incorporate in this chapter elementary optics, as the subject is well known to most educated men, but in case any reader should not know anything of light and optics, we recommend him to get Ganot's Physics, and thoroughly master at least the paragraphs of Book VII., on "Light," that we enumerate below.[1] This may seem a little formidable, but our reader will find that with a very simple knowledge of mathematics he can easily understand all the sections marked, and it is our opinion that light and chemistry should be studied directly from systematic text-books that treat of these subjects. In the Appendix we shall refer to some additional books which we consider advisable for the student to read, but for the present we strongly recommend him to thoroughly master the parts of Ganot that we have cited, and to avoid all other desultory reading until he has done so.

Ganot's Physics.

Far too much time has been given, and far too much importance has been hitherto attached, to the subject of optics as connected with photography. Much time and expense would have been saved had the pioneers of photography

[1] Namely, paragraphs 499, 500, 501, 502, 503, 504, 506, 508—the Laws of the Intensity of Light, 509—Photometers, Rumford's and Bunsen's, 510, 511—first proof only, 512, 513, 514, 518, 519, 524, 525, 528, 533, 536, 537, 538, 539, 540, 542, 543, 544, 551, 552, 554, 555, 556, 558, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 579, 580, 581, 582, 583, 584, 602, 604, 612, 615, 616, 617, 618, 619, 620, 621, 625, 626, 627, 628, 629, 631, 632, 634, 635, 636, 637, 639, 640, 641, 645, 646, 650, 652, 655, 656, 659, 661, and 664.

had good art educations as well as the elementary knowledge of optics and chemistry which many of them possessed, for without art training the practice of photography came to be looked upon as a science, and the ideal work of the photographer was to produce an unnatural, unscientific, and inartistic picture. It is, indeed, a satire on photography, and a blot which can never be entirely removed, that at the very time the so-called scientific photographers were worrying opticians to death, and vying with each other in producing the greatest untruths, they were all the while shouting in the market-place that their object was to produce truthful works. At length, when the most doubly patented distorting lenses were made to meet their demands, they, with imperturbable self-confidence, presented a sharp, untrue photograph, insisting upon its truth. "A truer picture," said they, "than drawing;" "truer than the eye sees," some said. In short their picture was absolutely perfect. When a lens giving a brilliant picture, with all the detail and shadows sharp, and the planes all equally sharp, was at last produced, the scientists were *in excelsis*. But, alas! they proved themselves as unscientific as they were inartistic! Had they but taken up their simplest form of lens and used it as a magnifying-glass, they would have seen immediately that all was not right, and instead of clamouring for the lies of "depth of focus," "wide-angle," "brilliancy," and the other hydra-heads of vulgarity, they might have set to and made the lens which was required. It was but a simple thing that was required.

Dallmeyer's long-focus landscape lens.

The question then arises—What is the best lens for artistic purposes? That lens is *Dallmeyer's new long-focus rectilinear landscape lens.* This summer (1888) we used one of these lenses and were delighted with it.

Why this lens is the best.

Why is this the best lens for our purpose? is the question that naturally arises. It is the best because being what is called a long-focus lens, it cannot be so ignorantly employed as can lenses of shorter focus, there is no appreciable marginal distortion, and with open aperture the outlines of the image are softly rendered, and

in addition the values seem to us to be more truly rendered by it.

Best focal length to use.

This lens then being, as we think, the best for artistic work, the next question that arises is what focal length of lens must we use to get the best results. The student will be told *ad nauseam* that if he places his eye at the distance of the focal length of the lens from the photograph he is inspecting, all will be well. Such, however, is *not the case.* He may prove it for himself by taking a lens of short focus and photographing any suitable object, and he may then place his eye at the distance of the focal length, and if he be an artist, he will immediately detect that the drawing is false, and the distance is dwarfed and pushed together as compared with foreground objects, whilst in a true drawing the proportions must be true between the foreground objects and distant objects. This misuse of the lens is what leads to the production of so many photographs false in drawing, and it is evident that since many of these falsely drawn photographs have been and are a basis for many scientific purposes, the calculations based upon them will have to be reconsidered.

Experiment for finding a rough rule for the use of lenses.

The next question is, what proportion, as a rule, should the focal length of the lens bear to the base of the picture to give approximately true perspective delineation? This proportion should be as two to one, that is, the focal length of the lens should be as a rough working rule twice as long as the base of the picture. We arrived at the result by making a series of drawings on the ground glass of the camera, and comparing them with a perspective drawing made upon a glass plate. Opticians have arrived at the same conclusion, for we find this is the rough rule stated by Mr. Dallmeyer in his "Choice of Lenses."

Comments.

False drawing producing false tonality.

The falsity of the statement that photographs are always true—a statement that has been in vogue from the earliest photographic days—is then apparent. It will now be obvious why some lenses make ponds of puddles, and otherwise falsify the landscape. This fact would have long ago been noticed had artists always seen the landscape

from which the photograph had been taken. Another thing which a wide-angle lens, if wrongly used, does, is, in the case of a picture with clouds, to draw down and crowd together the clouds, and define them more sharply than the eye sees them, so that when the negative is printed they appear too strong in value, and the whole picture is thrown out of tone, and is therefore false and inartistic, even if the lens be correctly used; this fault is generally present in pictures taken with these lenses.

Lenses recommended.

It will be seen from our remarks, therefore, that the only lens we recommend for artistic work is Dallmeyer's new rectilinear landscape lens. At least two of these should be obtained of different focal lengths, one of which is advertised to cover a plate a size larger than that used by the photographer. In addition a rapid rectilinear lens as advertised to cover a plate of the same size as his camera, will be found very useful for quicker work. For special purposes, for example in photographing beetles, or fish, or flowers for scientific manuals, the finest lenses procurable must be used, and sharpness, brilliancy, &c., are vital qualities in such work, for the work desired is diagrammatic and not artistic, but in these cases also the greatest care must be taken to use the lenses properly, so that the drawing is correctly rendered. Ignorant critics and enthusiastic partisans alike have claimed for photography, as its chief merit, "truthfulness." As has been shown, a photograph may be very false indeed.

Lenses for special purposes.

Another chimera is that of "composite photography," to which we shall again refer. When Mr. Galton tells us he uses an ordinary portrait lens for his work, that is quite sufficient, in our opinion, to destroy the value of his "composites," even were there no other considerations.

Portraits taken with rapid rectilinear lens.

The only really artistic series of photographic portraits we have ever seen, namely, those by Mrs. Cameron, were taken with the next best lens to that advocated, namely, a rapid rectilinear lens, but even they would have been improved by the use of the new lens. We have besides seen here and there really artistic portraits by amateurs

(but these were the result of chance, as no second picture was ever produced by the same worker), and they were taken by a rapid rectilinear lens. Mrs. Cameron, though not an artist, had knowledge enough to see that the portrait lenses of the day were undesirable for her work. And here it may be remarked that a great ignorance of optics is as harmful as wasting too much time upon its study. One professional portrait photographer, who has very occasionally succeeded in producing an artistic picture, prides himself, we are told, on not knowing what lens he uses. Such a man can never be an artist, for he cannot know whether his work is true or false. To appreciate falseness in drawing requires considerable training. An average judge of photography might discover gross distortion of limbs, due to violent perspective; but how many would notice the false drawing in a face which is taken with a portrait lens?

Dia-phragms.

Supplied with his lenses, the student will find "stops," or diaphragms. The name, "stop," suggests its use. By making the light pass through a contracted hole, the weak marginal rays are cut off, and the image is therefore made sharper all over. But though stops are used to correct an error, yet the ignorant use of them is as great a source of error. One of the causes of sharply defined and false heavy shadows in the much-vaunted "sharp photographs" is due to focussing sharply, and "stopping down," that is, to using a small stop. This is the invariable practice of most photographers.

Modified "stops."

Some ingenious workers have suggested modifications in the construction of "stops," with a view to improving the picture; one of these being a paper stop, made translucent with castor oil; but we have not found any advantage in these novelties. It is, however, a legitimate field for experiment, and translucent stops might be tried in indoor work and bright out-door effects.

Intensity of lens.

The student will often see in photographic papers that a lens works at $\frac{F}{8}$, or $\frac{F}{32}$, or some other number. This simply expresses the ratio between the working aperture and the equivalent focus of the lens, and is

obtained by dividing the equivalent focus by the working aperture. $\frac{F}{8}$ then means the aperture is one-eighth of the focal length of the lens referred to. The rapidity of lenses are compared in this way by squaring the denominators of the fractions thus obtained; when the results will give the ratios of rapidity. By "depth of focus" is roughly meant the sharp rendering of the different planes of a landscape, or any object with more than one plane in one plane. Needless to say, this quality, greatly sought for in lenses by photographers, is a thing to be carefully avoided in artistic work, as we shall show later on.

"Depth of focus."

By a flare spot is meant a spot on the focussing screen, which receives more light than the surrounding field; it is said to be caused by the stops being wrongly placed. The same effect is produced when the sun shines into the lens, the light being then reflected from the brass tubing of the lens, and it is for that reason that the lens must be carefully shaded during exposure, when the sun is directly in front of the camera.

Flare spot.

The angle of view included by a lens is an important consideration, and we shall refer to this later on; here we shall only show how this angle may be determined when the student wishes to do so. The angle, of course, depends on two factors, the length of the base line of the picture, and the focal length of the lens. This is practically determined by ruling a horizontal line the actual length of the base line of the picture, and drawing from the centre of this line a perpendicular equal in length to the focal length of the lens. Completing the triangle, we have in the angle contained by the two sides of the triangle the required angle, which can be measured by an angle measurer. Experience shows that if the base of the picture is greater than or equal to the focal length of the lens, the angle included will vary between 53° and 90°; but if the base is less than the focal length, these angles will vary between 44° and 19°, or less. It will be seen, therefore, that the long-focus lenses give more suitable angles of view for pictorial purposes.

Angle of view.

Hints on lenses.

Delicate optical instruments, like lenses, must, it is needless to say, be carefully protected.

A good lens should be free from scratches, striations, dull patches, due to imperfect polishing, and veins; but air bubbles do not affect its value, for it must be remembered that the shape of the hole through which the light passes does not affect the image, save only by cutting off some of the light. Thus, if a wafer be stuck to the centre of the lens, the image will be found unimpaired. Dust and dirt, however, though they do not seriously impair the definition of the image, yet cut off much light, as will occur to any one when he thinks of the difference between the light of a room, when the windows are dirty, and when they are perfectly clean. Lenses should not be left in bright sunlight, for this causes a change that slows them, the dark also injures them in certain cases, for, as all microscopists know well, darkness causes a change in Canada balsam, with which lenses are cemented together.

Mr. Dallmeyer insists that lenses should be kept dry and free from sudden changes of temperature, otherwise they may tarnish or sweat, as it is called. Any one who has been troubled with this sweating will never forget it. Our experience is that the best way to keep lenses is in small leather, velvet-lined cases. We generally keep with them a piece of soft chamois leather, or an old silk handkerchief. No compound of any kind should be used to clean lenses, if anything appears to be going wrong with them, they should at once be sent to the maker.

CHAPTER III.

DARK ROOM AND APPARATUS.

Dark room.

THERE is no need to despair if there is no dark room, no place to build one, no means to pay for one. Some of our most successful plates were developed in a scullery, and others in the bedroom of a house-boat. In fact, the sooner the student learns to develop anywhere, the better, for no one, studying to do artistic work, should leave his plates till his return home (if he is away on a journey), they *should without fail be developed the same day on which they are exposed.*

Developing rule.

Dark room.

Only for portraiture is a dark room very necessary, and you cannot do better than build one as suggested by Captain Abney, in his "Treatise on Photography," modifying it to suit your taste and means. One thing, however, you should be careful about, and that is the ventilation, and money should not be spared on that department. The dark room can be scientifically ventilated by any good sanitary engineer. We have already, elsewhere, gone into the subject of ventilation of dark rooms, warning photographers of the pernicious effects of defective ventilation.[1] The best sinks are made of earthenware, as supplied by Doulton. The lamp should be large, and give a good light. Ruby glass is, to some, injurious to the eyesight, and has been known to produce nausea and vomiting, in which cases cathedral green and yellow glass should be used. The photographer will

Ventilation.

Apparatus.

Ruby glass.

[1] "Ventilation of the Dark Room" and "Ammonia Poisoning" in the "Year Book of Photography and Photographic News Almanac" for 1885-87, and on "Pharyngitis and Photography" in the "Year Book of British Journal of Photography" for 1887.

Dishes. require at least eight dishes, and at the very start he should make it a rule never to use a dish save for one purpose. We consider the best dishes for all purposes are made of ebonite. They should be bought in a nest, the smallest size taking the largest plate used by the operator, and the other seven increasing in size, so that one fits into the other. This makes them more convenient for carriage. The dishes should be marked by painting on their bottoms. One will be wanted for developing, one for the alum bath, one for the changing bath, one for the hyposulphite bath, one for the acid bath in developing platinotype prints, one for the water bath in the same process, one for an intensifying bath, leaving one over for odd jobs.

When it is remembered that hyposulphite of soda is so "searching" that it has been known to penetrate through the ordinary so-called "porcelain" dishes and crystallize on the outside, one may judge how important it is to keep a separate dish for each operation.

Light cover. A light wooden board with a handle is most convenient for putting over the developing dish, in the earlier stages of developing, especially when using ortho-chromatic plates, but the student must be careful to keep it on a shelf by itself. Another requisite is a broad brush of

Sable brush. fine sable, say three inches broad, this had better be kept perfectly dry and clean in a box of its own.

Chemical solutions. The chemical solutions should be kept in bottles with glass stoppers, each bottle should have an enamelled label, so that it can be readily seen in the dark room, and

Plate washer. cannot be destroyed by the acids. A zinc washing

Drainage rack. trough which holds two dozen plates must be procured. A simple wooden drainage rack is also necessary. We

Travelling lamp. have tried several travelling lamps, and have so far found no satisfactory one. There are several in the market, and the photographer must choose his own. Two

Measures. measuring-glasses at least must be procured, and it is a good plan to use Hicks' opaque glass measures, as they can be so easily read in the dark room. It is as well to have one minim glass to hold sixty minims, and a large measure to take the full quantity of developer required

for one plate. A pair of ordinary scales with weights (apothecaries'), costing a few shillings, will complete the list of apparatus required. A few simple printing frames will be wanted, one of which should be a size larger than the plate used. A square slab of glass, the size of the plate, and another a few inches larger each way, will be found the best for trimming prints upon. A razor or very sharp knife will be found the best tool for this purpose.

Scales.

Printing frames.

Slabs of glass.

Our student should get all these things of good quality, and set his face against the syrens who whisper in his ear that he ought to get this, and ought to have that; he does not want anything more than we have told him, a greater number of things will only embarrass him. We are perfectly well aware that the most elaborate fittings have been put up by "amateurs" and "professionals," and we are equally aware that these have as yet not led to the production of a single picture.

CHAPTER IV.

THE STUDIO.

Studio.

For portraiture a studio is a necessity. We shall very briefly discuss the question of studios, for we hold that, provided a studio be large enough and light enough, there is not much else to consider. We have been in several studios, and worked for a considerable time in them, one of which we, having hired, had all to ourselves, so that our remarks are based on the experience of studios photographic, as well as on those of painters and sculptors.

Top and side light.

The best light is undoubtedly a top light and a side light, the side light reaching to within a few feet of the ground. It is a common fallacy among some portrait photographers that the side light should reach to the ground, so that the boots may be lighted. Of course such an idea arises from a misconception of the thing required; the boots are to be subdued as much as possible, it is the model's portrait we want, not that of his boots. The studio in this country should, if possible, face north, the roof sloping at an inclination of half a right angle. There should be no tall buildings standing near it, as exterior shadows and reflections interfere with the purity of lighting.

Building a studio.

We do not intend to give specifications for the building of a studio, for this has been already admirably done, and we advise any one proposing to build to consult Dr. E. L. Wilson's "Photographics," page 163 et seq. In our opinion this description leaves nothing to be desired; this proviso only being made, that the studio be made long enough to use a long-focus lens, that shall give

Dr. Wilson's specification.

us correct drawing. We have not tried Dallmeyer's new lenses in a studio, but if quick enough they should be used in preference to all others. Even if these lenses be not quick enough for studio work, no doubt one will soon be made that will be quick enough. The glazing should not extend from one end of the studio to the other; an unglazed space should be left at each end. By curtains the length of glazing can always be shortened. A grey distemper is perhaps the most suitable colour for the walls. Glazing. Walls.

Regarding business arrangements and conveniences, we have nothing to do with them.

FURNITURE.

The old, and even modern, portrait painters are answerable for many of the faults to this day committed by photographers, because they take portrait painters as models. Lawrence was especially guilty in the use of conventional backgrounds and accessories. Of photographic furniture, as generally understood, there should be *none*. The studio should be furnished simply, and with taste, as an ordinary sitting-room. There should be no shams of any kind, and the furniture should be chosen with a regard to unobtrusiveness and grace, rather than to massive beauty. All heavy curtains, draperies, hot-house plants, and such incongruous lumber, should be avoided. It should be remembered that what is wanted is a portrait—the face, or figure, or both—and all accessories should be subdued. It is very little use to lay down rules for these things, all must depend on the individual taste of the photographer. Furniture.

But, above all, avoid shams and cheap ornamental objects, such as cheap bronzes, china pots, and Birmingham *bric-à-bac*. The chairs should be upholstered with some good plain coloured cloth, with no pattern, and the floor carpetted with matting, or a simply coloured carpet without pattern. Let simplicity and harmony predominate. The room in fact should be a harmony in some cool colour, and the furniture should not be *felt* *Objets d'Art*, so called.

when in the room. Our advice is, buy your furniture anywhere, save at a photographic furniture dealer's.

Head-rests.

Head-rests must be entirely tabooed. We have taken many portraits, some with very long exposures, and no head-rest was necessary. In nine cases out of ten it simply ruins the portrait from an artistic point of view.

Reflectors.

Reflectors, on light stands, should be ready for use; but it is obviously erroneous to use large and unwieldy reflectors. The reflector is really only necessary for the head and shoulders; for our object is to subdue all other parts as much as possible.

Back-grounds.

All artificial backgrounds should be banished, together with such stupid lumber as banisters, pedestals, and stiles: they are all inartistic in the extreme. It is a false idea to represent people in positions they are never found in—such as a girl in evening dress against a sea-scape, and all the other hideous conventionalities of the craftsman's imagination. The background—which is a matter of vital importance—should be arranged to suit the sitter, that is, a harmony of colour should be aimed at. Light fabrics without patterns, or pieces of tapestry, will serve every purpose, and give most artistic results. The portraitist should keep a selection of pieces of fabric of light tints, and a light skeleton screen can be kept ready, to which to tack them as required, suiting the colour to the dress of the sitter. Gradated backgrounds are a mistake, the tonality is much better shown by having a background of one tint, and so arranging the light that the modelling and tonality shall be subtle and true.

Breadth and simplicity are the foundation of all good work. The background should never be placed close behind the sitter, as is customary; but its distance from the sitter should be studied with the lighting. As a rule, it is better to place the background three or four feet from the back of the sitter. What is required, is that the head shall melt softly into the background, and yet retain its modelling.

The camera.

The camera should work with a shutter—the Cadett pneumatic shutter for portraiture being as good as any we

know—and the pneumatic apparatus should have a long india-rubber tube attached, for reasons to be explained later on.

Artificial light portraits.

Means may be arranged for taking pictures by artificial light, if necessary, though personally we do not care for them. The tonality, though true to the light, has a false, artificial appearance by day. There are many methods of making artificially lighted pictures; the best, in our opinion, are those taken by the electric light. Others are done by gas, and by magnesium flashes; a method quite recently revived as something new, whereas it is very old. The best of these we have seen were done by the American "blitz-pulver;" but the results appeared to us somewhat artificial. We think artists will always avoid these artificial lights.

Studio effects.

A lighting rule.

You must remember that in a studio you are taking a person *in a room*, and that is the impression you must try to get in your picture. *It is a false idea and an inartistic one to endeavour to represent outdoor effects in a studio.* Studio lighting and outdoor lighting are radically different, and in a studio you have only to try and give an *indoor effect.* This has been the principle of all great artists. None but an amateur could fail to notice the falsity of lighting as seen in outdoor subjects taken in the studio. On the other hand, in a studio you may get any effect of lighting you can for indoor subjects, for all such effects are to be seen in a room by a careful observer. Adam Salomon took many of his portraits in front of a red-glass window. This is quite legitimate, as is also the arrangement of fabrics for the background, and the dictating what coloured dress the sitter shall wear. Let our student work in harmonies of colour as much as possible, and let him never take outdoor effects in a studio. Make the room as much like a comfortable sitting-room as possible, and hide all the tools of the craft.

Studio lighting.

Adam Salomon.

CHAPTER V.

FOCUSSING.

Focussing. HAVING now seen the principles by which we must be governed, and the apparatus required, we will briefly apply them.

How to focalize By focussing we understood, bringing the ground-glass into the plane which coincides with the sharpest projection of the image ; the position of this plane varying of course according to the focal length of the lens and the distance of the object from the lens. Presuming, then, that the camera is in register, and set squarely before the object to be photographed, as can be determined by the spirit-levels, let the student proceed to focus his picture as sharply as he can *without any stop*. He must be careful that the swing-backs are parallel to the front planes of the camera.

Mental attitude in focussing. Now the great habit to cultivate is to think in values and masses, that is, you must, in your mind, by constant practice, analyze nature into masses and values, and if you constantly practise this at the beginning, you will find that it becomes a habit, and automatically, as you look at a scene or a person, you will see on the ground-glass of your mind the object translated into black and white masses, and you will notice their relative values. This habit is absolutely necessary for artistic work, for it is by this analysis that you will learn to know what is suitable for pictorial art, and what is not ; for if the masses and values in a picture are not correctly expressed, nothing will ever put the picture right. Our own experience has been that where this analysis has left an impression of a few strong masses, the picture has always been stronger

when finished than otherwise. Now our student, having sharply focussed his picture with open aperture, must take his head from beneath the focussing cloth, and look steadily at his picture; fixing his eye on the principal object in the picture, he should go through this mental analysis, and at the same time note carefully how much detail he can see, both in the field of direct and indirect vision; and his sole object should be to render truly the impression thus obtained. He should then look on the focussing screen, and putting in his largest stop, and using his swing-backs, and altering the focussing as may be necessary, see how truly he can get this impression, always remembering that the larger the stop he uses the better. For this reason he should always begin with an open aperture, and work down to the smaller-sized stop as needed. By working in this way, he will soon see what marvellous power and command he has over his translation, all by the judicious use of his focussing screen, swing-backs, and stops combined. In focussing he must remember one thing,—never to focus so that it can be detected in the picture where the sharper focussing ends, and the less sharp focussing begins—as can be brought about by stops. The sharpness should be gradated gently. He must also remember that the ground-glass picture is false and deceptive in its brightness, due to obvious physical facts. This is a point of great importance, which must be allowed for. The ground-glass picture, though greatly admired by the Tramontane masters, and approved by Canaletto and Ribera, as Count Algarotti assures us in one of his raptures on the camera obscura, is not so natural and beautiful as it may appear from the toy point of view,—it is not what the artist wants, any more than he wants the pictures of an ordinary camera obscura, for if these pictures were satisfying in an artistic sense, every one could, by erecting a camera obscura, have the satisfaction of his desire, and there would soon be an end to the pictorial arts, photography included; for no one who loved this picture so dearly would want a camera to take photographs with, but only one to look through. The deceptive ap-

How to "stop down."

Ground-glass picture false.

Camera obscura.

pearance of the ground-glass picture must, then, be well considered and allowed for. As we said before, therefore, the principal object in the picture must be fairly sharp, *just as sharp as the eye sees it, and no sharper*; but everything else, and all other planes of the picture, must be subdued. But, at the same time, it must be distinctly understood that so called "fuzziness" must not be carried to the length of *destroying the structure* of any object, otherwise it becomes noticeable, and by attracting the eye detracts from the harmony, and is then just as harmful as excessive sharpness would be. Experience has shown, that it is always necessary to throw the principal object slightly (often only just perceptibly) out of focus, to obtain a natural appearance, except when there is much moisture in the air, as on a heavy mist-laden grey day, when we have found that the principal object (out of doors) may be focussed *quite sharply*, and yet appear natural, for the mist scattering the light softens the contours of all objects. Nothing in nature has a hard outline, but everything is seen against something else, and its outlines fade gently into that something else, often so subtilely that you cannot quite distinguish where one ends and the other begins. In this mingled decision and indecision, this lost and found, lies all the charm and mystery of nature. This is what the artist seeks, and what the photographer, as a rule, strenuously avoids.

Rule for focussing.

As this loss of outline increases with the greyness produced by atmosphere, it follows that it is greater on grey days and in the distance; and less on bright, sunshiny days. For this reason, therefore, the student must be very careful on bright days about his focussing, for on such days there is often no mist to assist him, but still he must keep the *planes separate*, or he has no picture. Let us imagine an example: A decaying wooden landing-stage stands beneath some weeping willows at the edge of a lake. From the landing-stage a path leads through a garden to a thatched cottage one hundred yards distant; behind the cottage is an avenue of tall poplars. On the landing-stage stands a beautiful sun-

Example.

bronzed village girl in a plain print dress : she is leaning against the willow and is looking dreamily at the water. We row by on the lake, and are struck by the picture, but above all by the dazzling native beauty of the peasant girl : our eyes are fixed on the ruddy face and we can look at nothing else. If we are cool enough to analyze the picture, what is it we see directly and sharply? The girl's beautiful head, and nothing else. We are conscious of the willow-tree, conscious of the light dress and the decaying timbers of the landing-stage, conscious of the cottage, away in the middle distance, and conscious of the poplars shining blue and misty over the cottage roof; conscious, too, are we of the water lapping round the landing-stage ;—we feel all these, but we see clearly and definitely only the charming face. Thus it is always in nature, and thus it should be in a picture. Let us, however, still keep to our scene, and imagine now that the whole shifts, as does scenery on a stage; gradually the girl's dress and the bark and leaves of the willow grow sharp, the cottage moves up and is quite sharp, so that the girl's form looks cut out upon it, the poplars in the distance are sharp, and the water closes up and the ripple on its surface and the lilies are all sharp. And where is the picture? Gone! The girl is there, but she is a mere patch in all the sharp detail. Our eyes keep roving from the bark to the willow leaves and on from the cottage thatch to the ripple on the water, *there is no rest,* all the picture has been jammed into one plane, and all the interest equally divided. Now this is exactly what happens when a deep focussing lens and small stops are used, and the operator (for no artist would do this) tries to make everything sharp from corner to corner. Let the student choose a subject such as we have suggested, and put what we have imagined into practice, and he will see the result. Yet this "sharp" ideal is the childish view taken of nature by the uneducated in art matters, and they call their productions true, whereas, they are just about as false as can be made. For this reason, too, it must be remembered that the foreground is not always to be rendered sharply. If our principal object is in the middle

distance, let us say, for example, some cottages on the border of a lake; our foreground, consisting we will suppose of aquatic plants, must be kept down, and purposely made unimportant; which is done chiefly by the focussing and stopping.

Mrs. Cameron's portraits.

Among the few satisfactory portraits we have seen are, as we have already said, those by the late Mrs. Cameron. In all of these, that fatal sharpness has been avoided; her focussing was carefully attended to. The well-known miniature painter, Sir W. J. Newton, one of the first vice-presidents of the Photographic Society of Great Britain, distinctly advised that all portraits should be thrown a "little out of focus." The falsity of focussing a head sharply is shown by the fact that by doing so freckles and pimples, which are not noticed by the eye, stand out most obtrusively, indeed a case is on record, where an eruption of small-pox was detected in its earliest stage by the lens, while nothing at all could be detected by the eye. This false focussing has brought in its train another huge falsity—retouching—of which we shall speak more fully hereafter.

Newton.

Sharp focussing, too, by making objects tell too strongly, throws them out of tone, and so ruins the picture. When sharpness is obtained by stopping down, the stop cuts off light, injures normal brilliancy, exaggerates shadows, and so throws the picture out of tone. Of course, if the object in view is to produce a diagram for scientific purposes, such, for instance, as photographs of flowers for a work on botany, or of fish for a work on ichthyology, or of butterflies for a work on entomology, the most brilliant illumination possible should be aimed at, and the focussing should be microscopically sharp, for such works are required to show the *structure* as well as the form. But, above all, the drawing should be correct, and this is obtainable only by the correct use of lenses, which, as we have pointed out, has not always been the case. If, on the other hand, the operator wishes to produce *pictures* of flowers, butterflies, fruit, fish, &c., the same rules hold good as for any other *picture*. As an example of the treatment of flowers, the student

Scientific diagrams.

Fantin's flowers.

will do well to study Mr. Fantin's paintings of flowers. We have never yet seen flowers, fruit, or still life artistically rendered by photography, though we have seen some diagrams to all appearances perfect, but in which the drawing must have been a little false. We have seen it stated by craftsmen who have produced diagrams of microscopic and other objects, that they were untouched (and rightly so), and that, *therefore*, these diagrams were artistic and true to nature. Of course, from what has been already said, it is obvious they were not true to nature (though, perhaps, none the less useful for that), and the statement that they were "artistic" arises of course from a total misconception as to what that word means.

Here, then, we must quit this subject, and we hope that we have impressed upon the student the fundamental necessity for exercising much thought and judgment and care in focussing, stopping down, and using the swing-backs, for these three all work together, and are quite as important as the questions of exposure and development.

Of course there is no absolute state of "sharpest focus," but when we use the word "sharp" we mean the sharpest focus obtainable by any photographic lens when used in the ordinary way.

CHAPTER VI.

EXPOSURE.

Ways of exposing.

A PLATE can be exposed in three ways, that is, by removing the cap and replacing it, when the exposure is made; by folding the camera cloth and placing it over the lens (the cap having been removed), before the shutter of the dark-side is drawn, and then quickly withdrawing and replacing the cloth and sliding back the shutter; and thirdly by using a mechanical aid, called a shutter.

The first method needs no comment save that the cap should be withdrawn in an upward direction. The second method has been of invaluable service to us, and is much practised by Scotch photographers. By this means very rapid exposures can be made, and yet detail obtained in dark foreground masses. The third method is so well known that hundreds of mechanical contrivances, called "instantaneous shutters," have been invented. We have always done all the work we could by quick exposures, and here we may at once say that for artistic purposes "quick exposures" are absolutely necessary where possible. We do not say "instantaneous exposures," because it is high time that this unmeaning word should be relegated to the limbo of photographic archaics. Is it not obviously illogical to call exposures of $\frac{1}{200}$ of a second, and of one second, both instantaneous? —yet such at present is the custom. "Instantaneous" means nothing at all, for a quicker exposure can be obtained by the second method we have described than with some shutters. It is in fact difficult to classify exposures, for obviously the classification must be based,

"Instantaneous shutters."

Quick exposures.

"Instantaneous."

Classification of exposures.

cæteris paribus, on the time the plate is exposed, and this, especially in quick exposures, is not to be measured save by special apparatus, which of course is of no rough working use. We offer as a suggestion the following rough working classification for describing exposures. We would define as

QUICK EXPOSURES,

Quick exposures.

Uncapping and capping lens *as quickly as possible.* Snatching velvet-cloth away and replacing it *as quickly as possible.* All shutter exposures which *cannot be timed* by the ordinary second-hand of a watch; a note being added in the case of shutter exposures, giving make of shutter, and stating whether it was set to quickest, medium, or slow pace.

TIME EXPOSURES.

Time exposures.

All other exposures might be called *time exposures,* it being understood by this term, *that the exposures were long enough to be counted by the second-hand of an ordinary watch.* A note could always be added giving the number of seconds the plate was exposed.

We are perfectly aware this method would give only approximately rough statements of the times of exposure, but that is all that is wanted for ordinary work, for after all, except in delicate scientific experiments, the times given to exposure must always vary greatly, for exposure, as we shall show, can never be reduced to a science. On the other hand, in cases of delicate scientific work, it may be required to measure exactly the length of the exposure, and this is easily done with the proper apparatus, as applied by Mr. Muybridge and others. Our nomenclature is intended for the use of ordinary operators, so that they may describe more accurately than they now do the exposure given to a particular plate; and it is at any rate more accurate than any nomenclature now in use, for, as we have shown, by the camera cloth method a quicker exposure can be made than with many shutters working slowly. The fundamental distinction, it seems to

us, for everyday work is, whether the time of exposure is measurable by the seconds-hand of an ordinary watch or not, and that is the point on which our nomenclature is based. Hence, when we use the term "quick exposures" in this work, we mean it as already defined. The shutters themselves should, we think, be called "quick exposure shutters," or simply "exposure shutters," instead of instantaneous shutters. We will say but few words on "shutters," as these mechanical aids to exposure are called.

Name of shutters.

Exposure shutters.

Theoretically, the best shutter is that which allows the lens to work at full aperture for the longest time, and which causes no vibration or alteration of the position of the apparatus during exposure. The mechanism should be simple and strong, and the whole small in bulk. Mr. T. R. Dallmeyer's new central shutter, in our opinion, best fulfils these requirements. Another important matter is the correct position of the shutter, and this, theoretically again, is behind the lens, providing the aperture be large enough to prevent any of the rays of light admitted by the lens being cut off. But in practice, a shutter working in the diaphragm slot of the lens answers best, and the very worst way of all is to work the shutter on the hood of the lens.

Quick exposures.

All portraits should be taken by shutter, and by quick exposure, if possible; in fact, we feel sure a *first principle of all artistic work in photography is quick exposure.* There is nothing to be said for time exposures, although we are fully aware how much has been written on their advantages, and the beneficial effects on the resulting negatives. We, however, have never seen these wonderful gains, and for quality we have seen very rapidly exposed plates result in negatives which will hold their own in quality against any, whilst in every other respect, there is everything to lose in "slow" or time exposures. There are cases, of course, when time exposures are admissible, and even necessary, as in certain grey-day landscapes, but when dealing with figures or portraits in good light, let the exposure be as quick as possible, ere the freshness and naturalness of the model be lost.

Of course, from what has already been said, the student can understand that the exposure will vary with the attendant circumstances. When he considers that there are several factors to be considered in determining the length of exposure, such as the lens used, the stop, the hour of day, the season of the year, the constantly varying conditions of light, the subject and the plate used,—he will see how hopeless it is to lay down any rule for the time of exposure, but it will be as well to consider the effects of these factors, and thus briefly to indicate to the student what he must especially study. Variation of exposure.

We have already shown how the rapidity of different lenses may be compared. This factor, then, can be determined, but after all it is of little practical value. It is no doubt necessary when a new lens is used, and every photographer may, when using a lens for the first time, have to work out its ratio intensity, but as most workers know their lenses, this factor is hardly worth considering, for by practice the operator easily determines their intensities. The lens and stop.

These are by far the most important factors with which we have to deal in exposure, and as they are as variable and uncertain as nature herself, so must exposures vary and be uncertain until meteorology shall be perfected. Even the perfect actinometer which we are promised will not settle the matter, for there are so many subtle conditions to consider besides the mere chemical power of light. For instance, for artistic reasons of light and shade, it may be absolutely necessary to work against the readings of the theoretical perfect actinometer. That a perfect actinometer may be of use in scientific photography we do not doubt, but that is a matter which concerns only scientific specialists. Meteorological conditions.

A few examples showing the protean aspects of nature, and the difficulties of dealing with it, will illustrate our meaning. Bouquet has calculated that the sun at an altitude of 50° above the horizon is 1200 times brighter than at sunrise. If we, then, apply the ordinary chemical law, that the chemical action is proportionate to the illumination, noon would be the time to give the least Bouquet.

exposure; but such is not our experience, for the period of greatest intensity is often an hour or so before or after noon, because the angle of reflection is more favourable to us. Again, another factor to be considered is the presence of clouds; white clouds needing less exposure, as they reflect light to a powerful extent. Again, in sunrise and sunset light we have to consider refraction, the warm colours predominating. Another point to consider is our altitude, for we have less atmosphere in high altitudes; therefore, as any Alpine traveller knows, the sun acts more powerfully on the peaks than in the valleys. Dr. Vogel tells us that the light of the blue sky is chemically active and powerfully so. It will be seen, then, from previous remarks, why winter light is so feeble. Bunsen has worked out the chemical power of light, and expressed it in degrees thus:—

	12 (noon).	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.
Jan. 1	38°	38°	38°	37°	35°	30°	24°	14°	6°
Dec. 21	20°	18°	15°	9°	0°	0°			

Thus at noon on January 21st the light is nearly twice as powerful as on December 21st, and when we couple with this fact the moisture generally found in the atmosphere at mid-winter, we see how deceiving are appearances. Again, it is acknowledged by many that the light in autumn is one and a half times as great as it is in spring; but we cannot act on this knowledge alone for outdoor work, for the conditions of vegetation are quite different, for, as Tyndall has shown, "in delicate spring foliage the blue of the solar light is for the most part absorbed, and a light mainly yellowish-green, but containing a considerable quantity of red, escapes from the leaf to the eye: . . . as the year advances the crimson gradually hardens to a coppery red."

Another complication is the east wind. It certainly sweeps away the moisture from the air and dries everything up, giving all things a black hue, and bringing them up closer to view, at the same time dwarfing distant objects; and while an east wind does all this by taking away moisture from the atmosphere, the actinic value of light is at the same time lowered. On the other

hand, after rain, the light acts quickly, probably owing to the numerous reflections from moist leaves, and from the fact that they do not absorb so much light under these conditions. That the warm colours require a longer exposure than others is too well known to need dwelling on. The presence of water in the foreground, on the other hand, necessitates a shorter exposure: even the amount of sky included in the picture will affect the length of exposure. The existing temperature, too, strongly affects the negative.

No rule for exposure.

It is perhaps necessary here to state that there is no set key or scheme of lighting to work by. Some untrained persons have preached that no photograph should be taken when there is no sun, or that sunlight is the best time for taking a photograph : such statements are as absurd as childish, one might as well ordain that all music should be played in one key. As beautiful pictures are to be obtained on the grey dull days of November as in sunny June. We remember once reading a statement that all paintings were of sunshine subjects. We quite forget by whom this extraordinary statement was made, but at any rate the author must have been very ignorant of his subject; he could never have heard of half the great pictures of the world; but surely the name of Rembrandt might have occurred to him. A photograph must be true in sentiment, and true to the impression of the time of day, just as a picture must be. There are some subjects which in sunshine look beautiful, and which on grey days are worthless, and *vice versâ*. Therefore, here again there is no rule, each subject must be judged by itself.

Sensitometer.

The rapidity of plates can be measured by an instrument called a sensitometer. That one in general use is made by Warnerke. But this sensitometer, like many so-called scientific things in photography, seems to us very unscientific, for the light cannot be uniform; for, as is well known, the light given from phosphorescent paint varies in intensity with the temperature. Since writing this, we have been informed that this has been proved to be the case by Dr. Vogel, who, in addition,

brings against this sensitometer serious errors of experiment, due to yellow glass being employed. Dr. Nicol, too, has stated that the screens sent out vary in density. It is then, as Dr. Nicol asserts, "a pretty toy" and nothing more.

On exposure tables.

We have seen how the rapidity of a lens is determined; beyond, then, the comparing the relative rapidities of lenses, all tables of exposures are fallacious and unscientific. Can absurdity go any further than some of the data of some of these so-called scientific tables: "Panoramic View," "Living objects out of doors," &c.? Briefly, what is the difference of exposure required on a living ass and on a dead donkey, both out of doors? But seriously, let the student be not led away by such chimeras, for there can be no tables of exposures until the science of meteorology is as fixed a science as mathematics; and any attempt to work by exposure tables will end in dismal failure. If our word is not sufficient to convince any reader, let him note what two eminent scientists think of these tables. Dr. Vogel says, in one of his works, "There is no rule which determines the length of time a photograph has to be exposed to the light;" and Captain Abney has told us he considers such tables absurd and unscientific. It is with his sanction that we quote him on the subject. Exposure must be judged by circumstances: no artificial aids will help. Fortunately for us, plates allow of considerable latitude of exposure.

But as in all good things, simplicity goes hand in hand with perfection. We have advocated quick exposures as absolutely essential to artistic work, and it follows, therefore, that in making quick exposures there is less liability of going wrong; so the two work hand in hand. He who exposes slowly misses the very essence of nature, and it is this very power of exposing so quickly that gives us a great advantage over all other arts. The painter has to resort to all sorts of devices to secure an effect, which perhaps only lasts for half an hour in the day. Not so with photographers, if we see and desire to perpetuate an effect, it is ours in the twinkling of an eye, and thus in a really first-rate photo-

graphy there will always be a freshness and naturalism never attainable in any other art. And here we would state definitely that the impression of these quick exposures should be as seen by the eye, for nothing is more inartistic than some positions of a galloping horse, such as are never seen by the eye but yet exist in reality, and have been recorded by Mr. Muybridge. Here, then, comes in the artist, he knows what to record and what to pass over, while the craftsman, full of *himself* and *his* dexterity, tries to take a train going at sixty miles an hour, and lo! it is standing still, or he expends his energy in taking a yacht bowling along abeam because that result is more difficult to obtain than to take it going away from him, and he calls it natural and therefore artistic. Of course such performances are born of ignorance and vanity. Hundreds of such things have been done in the past, hundreds will be done in the future, and they will sell, but only to be finally destroyed. No photographer has yet done a series of marine *pictures;* here and there one sea-picture has been done, but has oftener been the result of chance than of art. As for the ordinary photographs of yachts, they are mere statements of facts that merit no serious consideration.

Here, then, we must leave the question of exposure. It is, perhaps, the most important and the most difficult of all photographic acts. In the studio the matter is simpler than out of doors, because the light is not so much affected by reflections and various meteorological conditions; in landscape work, on the other hand, exposure becomes a most difficult problem, but yet long experience can bring an intelligent man to give comparatively correct exposures, so that the resulting picture may be developed to obtain the exact impression that he requires, though even after years of experience, he will often find himself perhaps baffled and humiliated by failure.

It is in exposures that inspiration acts as it does in all intellectual matters, and he who can seize on the right exposure at once by intuition is the artist born, and unless, after some practice, the student can do this, there is little hope that his work will ever rise above mediocrity.

CHAPTER VII.

DEVELOPMENT.

Study of chemistry

BEFORE entering on the subject of development, it is necessary to tell the student that if he does not already understand the principles of chemistry, he should lose no time in doing so, and as aids to such understanding he cannot do better than get Roscoe's "Lessons in Elementary Chemistry,"[1] and Abney's "Photography with Emulsions," and master the chapters mentioned in the footnote, ignoring the rest for the time. Also let him buy Bloxham's "Laboratory Teaching." For a few shillings he can purchase apparatus enough to do qualitative analysis. This he will be able to do by following Mr. Bloxham's directions, omitting, perhaps, testing with the blow-pipe. If he has the time and means, he will do well to do some quantitative analysis, working, say with water, since it is of such immense importance to the photographer. He will find a knowledge of chemistry as interesting as useful, and the power of observation and accuracy acquired by the study will be invaluable in subsequent stages of his work. We refer the student to works on chemistry by specialists, because we think it is a mistake to swell the bulk of our book by an exposition of chemical principles. We caution the student

[1] Roscoe's Chemistry :—
Lessons 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, and potassium, sodium, and ammonium in lessons 19, 22, 23; chromium and uranium in lesson 25; mercury, silver, and platinum in lessons 26, 27, and 28.
"Photography with Emulsions :"—
Caps. 1, 2, 3, 5, 6, 7, 8, 9, 22, 24, and 31.

however, who intends to take up photography as an art, to have nothing to do with plate-making. That manufacture can only be done satisfactorily by experts constantly employed at it, and it is as reasonable to expect a painter to prepare his own colours and make his own canvas, as to insist upon a photographer making his own plates. Some people have tried to propagate the false idea that a picture taken on a plate of the exhibitor's own making has a special kind of merit, but of course this is only true when the object is an "Emulsion process competition." In judging of the merits of a picture, no facts should be taken into consideration, save the art expressed by the picture. Still the student should know the methods by which his plates are prepared, and that his chemistry will teach him, and when he has found plates which suit him, let him keep to them. We have worked with fourteen different kinds of plates, and have found most of them good, though each requires different treatment. One piece of advice is, however, necessary, always buy your plates direct from the makers, unless you can rely upon your dealer. Some plates are, of course, much quicker than others, and this point the beginner must carefully bear in mind, making his exposures accordingly. He must not forget, however, that there are brands of plates which are "starved" of silver; these he should avoid, and it would be well if a vigilance committee were appointed in every society to test batches of plates occasionally, and report on them in the photographic journals, thus showing up the fraudulent manufacturers. Assuming, then, that the student has carefully studied the chemistry of development and has fixed on a satisfactory brand of plates, we will proceed to give him a few practical hints, but before we do so we must get rid of an obstacle in his path, and that is the wet-plate process.

Plate-making.

Plates.

Vigilance committees.

If the student were to ask nine out of ten middle-aged photographers whether they prefer a wet plate or a dry plate negative, nine out of ten would, without doubt answer, "Oh, a wet-plate negative." If the student is curious and asks, why? he will get a vague answer, in which the words "bloom" and "beauty" play con-

Wet-plate process.

spicuous parts, the adjectives reminding him of an advertisement for patent balms for the skin. The fact is, not knowing the first principles of art, photographers have raised for themselves false gods, and they are still worshipping them. Let us at once and most emphatically state that wet plate negatives do not give so true an impression of nature as a gelatino-bromide plate, nor are the results so artistic. We have seen much of the best of Mrs. Cameron's work, and she obtained from collodion and silver some of the best results ever obtained from wet plates, for she had artistic insight, yet even in her work the tonality is not so true, and the "quality" and freshness is not so fine as can be obtained from gelatino-bromide negatives. The work by this process is hard, and incapable of expressing texture correctly, while the general impression is artificial. This is fortunate for us, for the slowness of the wet-plate process would seriously handicap it, even if the artistic result were better than that of dry plates. The inadequacy of collodion plates is emphasized when we look at the work of the craftsmen who used them, and whose ideal was sharpness and "bloom." Such work will be found most unnatural and inartistic. Surely many of the false ideas current amongst photographers arose from the evolution of the art. Daguerreotypes, the first photographs, were shiny, and most of the subsequent processes followed in their wake, until one clear-sighted photographer, Blanquart-Evrard, tried to combat the evil tendencies. Considering, then, the poor artistic quality of collodion plates and their slowness in exposure, there is absolutely nothing to be said in their favour. It is decided, then, that our student will work with gelatino-bromide plates.

Hints to be remembered in developing.

We venture to state briefly certain hints founded on the chemistry and practice of development, which the student must have at his fingers' ends, for let him remember that *the vital question of tone depends on development.* That exceedingly nice question of getting the tones in approximately true relation, which gives all artists so much work, gives him who uses photography as his medium no less thought, and it is on account of the *plasticity of the*

process of development that we can at once take our stand and repudiate the ignorant assertion that photography is a mechanical process. Of course there are fifty other reasons why it is not merely a mechanical process, to mention one more of which will be enough, i.e. the variety of exposures ranging between the $\frac{1}{2000}$ of a second (as with Muybridge's work), and a couple of hours as in taking an interior. Developing is really what modelling is to the sculptor, and as art guides the modeller's hand, so it must the photographer's who wishes to obtain *pictures*, and the art value of the work of both men will be proportionate to the art knowledge and insight of the workers. Now you can understand how absolutely necessary to good photography is a knowledge of art. Where photographers are devoid of all art knowledge, their aim is to get "pluck," "nice gradation," "vim," "snap," "sparkle," "brilliancy," to use only a few of their illiterate and inartistic terms, and, according to them all these strangely named qualities must be present equally in a sunny picture and in a grey-day picture, if ever they dare to expose a plate on a grey day. It is all such talk that has brought photography down to be called a merely mechanical process, which of course it becomes in the hands of those who can and do give "pluck" and "sparkle" to every negative, regardless of effect. It never occurs to these that each picture is a problem in itself, and needs different management from beginning to end. They aim for their "sparkle" from the moment of exposure to the end of development, and obtain all the other qualities described so eloquently by their cheap adjectives, by their *unvarying* development.

Now let the student, keeping all this in mind, carefully commit to memory these hints, for they are of vital importance.

Hints.

Placing the plate in water before using the developer is equivalent to weakening the developer.

By first immersing the plate in the pyrogallic acid solution with no restrainer or alkali, the subsequent development is slowed, and greater contrast obtained. When pyrogallic acid is added in excess, too great density and

fog result. By adding pyrogallic acid, greater density and contrast are obtained.

If the high lights are getting too dense, before the detail in the shadows is well out, take the plate out of the developer and let the details develop up with the amount of solution contained in the film, and then replace it in the developer for density, if necessary.

Develop plates coated with quick emulsions to a greater density than others.

Where there is much black and white in the picture, as in photographing sculpture against black velvet, weaken the pyrogallic acid. The alkali brings up the detail, and in properly exposed pictures increases density. In excess it causes fog. The rate at which the picture is to be developed can be governed by the restrainer, which also checks detail and increases density. For long exposures the restrainer should be freely used, whilst for quick-exposure work its use should be very limited.

Too much hyposulphite in the developer tends to solarization. Although its value in the alkaline developer has been denied, we are of opinion that in certain cases it is invaluable; it accelerates development in dark shadows, rendering the reflected light in the shadows as nothing else can. Captain Abney recommends its use in the ferrous oxalate developer only, but we are well assured of its value in conjunction with the alkaline developer in all cases of very rapid exposure.

The action of the developer is of course increased by the alkali, and slowed by the oxidizing agent, but the tonality is affected unless it be well governed by the restrainer.

If a picture flashes out quickly, add the restrainer and plenty of water. If it comes up very slowly, mix a new developer containing half as much restrainer as the normal and twice as much alkali.

The quicker the action of the developer the less marked the relative tones; this is most important to remember; the pyrogallic acid should never be extremely strong, never perhaps so strong as recommended

in the standard formulæ. We must remember, then, that we have our three necessary factors for development, the oxidizer, the alkali, and the restrainer, all of which we can modify at will. On our minds, too, we have, or should have, a vivid impression of the picture translated into black and white; we remember what we wish to emphasize, and what to subdue, so that the resulting picture shall be true in tone and impression. We proceed then to mix our developer accordingly, remembering first that the temperature of the developing-room makes a difference, and remembering that the photographic image exists on the film to a degree proportionate to the actinic value of the light which fell upon it. Therefore, if it is a brightly-lighted landscape in sunshine, taken with a full exposure, we must get a picture in a high key, but be it remembered in such a picture the light greys will be lost in the whites, as has been already shown; on the other hand, if it is a very low-toned effect, the dull greys will be lost in the blacks. We must never forget to develop *all plates slowly*, let this be our ever-present rule, for by developing slowly, the student has far more command over his work, and that is what every artist seeks to have. No haphazard work, but complete control, so that we can mould the picture according to our will. And here we must again remind the student that he can never get scientifically correct gradations from high light to deep shadow, therefore he must be prepared to get only the true impression, and as a fundamental law, let him remember to *watch over the truth of the lowest tones.*

Method.

Slow development.

It must not be forgotten that Nature is ever varying, and that the chemicals will act differently under different conditions of temperature, mixture, electrical conditions, &c., &c., and the worker must learn to modify them accordingly; thus weaker solutions should be used in summer and on mist effects. In fact, the more one sees into photography, the more difficult does the matter become, for every picture is, from start to finish, a new problem. Artistic work is not nearly so amenable to rules as is laboratory work, where the conditions

Meteorological conditions to be adhered to in developing.

are generally more constant and better determined. Even the state of the weather at the time of exposure has great influence. The careful observer will soon see, in going over a collection of first-rate negatives, developed by the same hand and developer, that they all differ in quality, each one has physical characteristics of its own, which are the combined resultant of these protean conditions of Nature, and that such is the case is yet another proof of the individuality of a photograph *per se*, apart from any other reasons.

Another very important point is the fact that the light does not act on the film proportionately to the length of exposure; the greatest action occurs at the earliest part of the exposure, as can be proved, in a rough way, by exposing a plate on different subjects for the same length of time. This fact alone at once and obviously creates a fatal objection to composite photography. It is a fact which must be constantly remembered in relation to tonality. It has been stated that an under-exposed plate can be improved by being kept (undeveloped) for several months, the idea being that the action having once begun will continue, but this is not our experience with gelatine plates, though we have observed something of the kind in working with carbon tissues. Instead of keeping his exposed plates, our advice to the student is *develop your negatives as soon as possible after exposure, never later than the day on which they are taken*, and for these reasons. First, and chiefly, because you should develop your negative whilst yet the mental impression of what you are trying for is fresh. You have, we will hope, analyzed your subject and thought it all out in black and white masses, and by developing while that analysis is still vivid to you, you stand a very much greater chance of getting a true thing. Secondly, of course, you are on the spot to take another negative if the first prove a failure. For complete success, this is the only way, and even if it entail carrying about a cumbersome dark tent, the practice will in the end bring its own reward, and it must be insisted upon as the best method of working. The astounding habit

Plates to be developed on day of exposure.

which some "professionals" indulge in, of sending their operators all over the country, while they themselves stay at home to develop the work of those and other operators, accounts in a great measure for the numerous parodies of Nature which deck the shop-windows. This is truly mechanical work, and we are prepared to say that no one, save by mere chance, can produce perfect artistic work, *who does not develop his own plates on the spot.* Then, again, the student of photography who wishes to produce artistic work must not hurry or over produce. One *picture* produced in a month would be well worth the time and trouble spent on it. We once asked an eminent landscape painter how many plates he would be content to produce in a year if he were a photographer. His answer was, "Twenty first-rate things would be good," and *that meant working all the year round.* We recommend that saying as one worthy to be remembered. The poet Gray purchased immortality by one short poem; many historians and novelists, now forgotten, have written as many volumes as there were verses in that one poem of Gray's, yet few would prefer the oblivion of the prolific ones to the name that Gray has won.

On over-production.

But we must go back to developing, and we come now to the question of, "What developer to use?" In our opinion the ferrous oxalate developer is unsuited to artistic work. At one time we used it for negatives and positives. For negatives we do not think it gives the quality which can be obtained with the alkaline developer, nor does it allow of the same control, which is of course a very grave fault. For positives, on the other hand, where the conditions are better known, and where absolute purity of film is required, it is very useful, but as we are not concerned with positives here, we will not go further into the matter.

Ferrous oxalate developer.

We must impress upon the student the necessity of always using fresh and pure chemicals, and to secure such, it is wise to procure them from a good chemist.

Chemicals.

Re-sublimated pyrogallic acid should always be used, and re-crystallized *sulphite* of soda, and, above all, be

sure the water is pure. For all operations where chemical action results, none but pure non-aërated water should be used, preferably, boiled, distilled water, for the air and other impurities in ordinary water may be most harmful, as any one who has studied the analysis of water and air knows well.

Let the developers (the stock solutions) be mixed with boiling or distilled water, for this will aid in preserving them pure. The alum and hyposulphite solutions should be mixed with cold boiled distilled water, the alum bath being a saturated solution.

Standard developer.

Perhaps the simplest advice we can give as to the particular developer to be used is to take as the normal developer one mixed by the formula sent out with the plates which the student has chosen to work with, but the student must not use it in the exact proportions given by the maker. Let the student mix up the stock solutions as told, varying the constituents as the case in hand demands. If he has carefully and thoroughly read his chemistry, and if he remembers the hints we have given him, he will have no difficulty in following out the directions.

He should, as a rule, never use more than two-thirds of the amount of pyrogallic acid recommended; let him be very careful how he uses the restrainer, and let him add the ammonia *only in small quantities*, unless the exposure has been very rapid. As a rule let him work with *weak developers*. We could easily give a dozen or even fifty formulæ for developers, but the student would be no wiser if we did, only more confused. Every photographer fancies his own particular formula, but we have no belief in any special favourites; we have worked with many, and find the results depend altogether on the quantities used and the manner of developing rather than on the developer. Take, then, the formula recommended by your plate-maker, but use it, as we have said, with judgment. Begin with a sufficiency of pyrogallic acid (according to the subject), use little restrainer, except in over-exposure, and add the ammonia slowly, adding a few drops from time to time as

required. In short, make it your rule to *use weak developers, and develop slowly.* If you think you are likely to have under-exposed, add ten to twenty drops of a one per cent. solution of hyposulphite of soda, using no restrainer. Some unscientific persons imagine that development can be reduced to a science, and that absolute quantities of each solution must be used. One might as well expect a physician always to prescribe the same doses. Each picture requires a developer of its own; that should never be forgotten. We have tried hydrokinone instead of pyrogallic acid; a given quantity of hydrokinone does the work of double that quantity of pyrogallic acid, but it has no advantages, so far as we can see, except for the development of under-exposed plates. For very rapid work we recommend the carbonate-of-potash developer, as green fog does not result. The formula we use is Dr. Eder's:—

Eder's potash developer.

A. ℞ Pure dry mono-carbonate of potash	.	90 parts
Water	.	200 „
B. Pyrogallic acid	.	12 „
Sulphite of soda	.	25 „
Citric acid	.	1½ „
Water	.	100 „

Before using, mix forty to sixty drops of A with three ounces of water, and the same quantity of B. We generally use more water than that recommended in the formula.

Now it will be remembered that in bright sunny effects brilliancy, and therefore density, is needed; the gamut of light and shade is not so extended as in some subjects, for the shadows are bright with reflected light, but the whole must be brilliant and in a high key. In our opinion Dr. Eder's potash developer gives this better than any other. For snow scenes, on the other hand, where there are often very black heavy shadows, we recommend, as we have done before, the developer given by the maker of the plates, used weak.

Local treatment.

No photographer need hope to obtain perfect results and exactly what he wishes, without resorting to local treatment; and here once more the knowledge of the

artist steps in and places him at an advantage over the craftsman, but no one without sound art-knowledge should attempt this local development. On the other hand, with a thorough knowledge of the tonality of his subject, the artist can, by local treatment, so modify his work that he will be able to obtain wonderfully true results. Let us imagine such a subject as a dark tree in the foreground of a landscape with a bright delicate distance. No manner of development will bring these true unless local treatment is resorted to. Unfortunately, directions cannot be given for this work, for each subject will of course require special treatment; the rationale of the practice, however, is founded on the general chemical principles of photography. For use in local development, then, it is always wise to keep a series of small paint-brushes at hand. All three developers may thus be used locally with great effect. During local development, the plate should constantly be re-plunged into the developer, so that the local development may not show. We strongly recommend the student *always to develop by artificial light*, for by this method he will have a more regular standard to judge of the quality of his negative than if he trusts to the varying strength by daylight.

The best way of judging of the tonality of a negative is to hold it up from time to time before the light of the developing-room; correct judgment on this matter can, however, only be obtained by long experience. The student will be told in the printed directions—supplied with many plates—that if the image does not come up in 10 or 15 seconds, the plate has been under-exposed. This is not our experience, and, as a rule, the image takes longer to show than the time named. We prefer to judge by the way the image comes up. If the highest lights come up very sharply defined and turgid, then the plate is under-exposed, but if they come up delicately, and detail begins to appear gradually over the various parts of the plate, all is well. But all this will only become familiar by experience. By constant habit the student will mentally run over the facts of the problem before him, as does a

physician, and proportionately to his skill will he apply the right remedy at the right time.

After development the plate should be well washed, and then placed in an alum bath. Alum acts as a scavenger, and clears up all the remains of the developer. Next the plate should again *be well washed,* and put in the hyposulphite bath. This bath should be constantly renewed, for as soon as it becomes well discoloured it is useless. It should not be made stronger than 1 to 10, 1 to 5 being the best proportion. Taking the plate from the fixing bath, you should wash it very thoroughly, and re-plunge it into a fresh alum bath, leaving it for a few minutes, then again wash it, and put it into a plate-washer, the water of which should be frequently changed. It can then be placed in a drying rack, and left to dry gradually in a dry room, where no dust is raised. After-treatment of plate.

It is, in our opinion, always well to expose two plates on each subject, for the operator can thus, in a second plate, correct any error he may detect in the first. This is our own invariable rule, and the practice, apart from the better results obtained, has taught us better than any other method could have done, how wonderfully the plate can be brought under the operator's will. It is hardly necessary to say the first plate should be examined after development, by daylight, before proceeding to develop the second. Once having seen a beautiful thing in nature, the enthusiastic student will determine to get it *perfectly,* if it takes fifty plates and as many days to do it in. Duplicate plates.

We strongly advise those desirous of doing artistic work to begin by studying tone, expose (always giving two exposures to each subject) on selected subjects, especially fit for the study of tone; for example, a figure in a white dress against a white background, another in a black dress against a black background, and then a white dress against a black background, and a black dress against a white background; some white flowers against a sheet of white paper; yacht-sails against the sky; faces against the sky; black velvet in bright sun- Study of tone.

shine, and on a grey day; yellow flowers (with orthochromatic plates) on a white background. In short, the student should think of all the possible harmonies and discords that can be found indoors and out of doors, and he should, before taking a plate, make a mental translation of the subject into black and white, and put on paper roughly, with a piece of charcoal, what he expects to get, by drawing rough masses in tone of the subject. He should at first think nothing whatever of composition, or the more poetical qualities of a picture; but simply study tone, and by this he will learn thoroughly exposures and development. Let him eschew all requests to take portraits, dogs, horses, parks, and what-nots; but let him always study tone. When he has mastered tone, and with it exposure and development, he knows the most difficult part of his technique, let him then proceed to picture-making. In this early stage let him take anything and everything that is a study of tone, and let him take it anyhow, no posing, no arrangement, and when he knows his *métier* thoroughly let him destroy all these early plates ruthlessly. We strongly advise him to give away no prints of early work, or he will most surely rue the day when he did. In our opinion a year is not too much in which to work in this way, both in doors and out of doors, in studios and out, with shutter and without, before there is any attempt to take a portrait or picture of any kind.

Accidents and faults.

In working with gelatine plates various unavoidable accidents and faults will crop up, some of which can, however, be remedied. Such cases we will now go into.

Under-exposure.

Gives chalky whites and sooty blacks, *ergo* no tonality, *ergo* worthless. No remedy, destroy at once.

Over-exposure.

Gives thin negatives. What a thin negative is, is a matter of opinion, and must be settled by a comparison of the print with the impression of nature which it is wished to obtain. For many effects thin negatives are invaluable, and the student must not take the ordinary photographer's opinion as to his negatives; but only that of an artist, for, as has been shown, low-toned prints are unrecognized by the ordinary craftsman, his aim and object is never to produce

such things, these he designates by all sorts of names, whereas they may be, by their tonality, infinitely truer than his "sparkling" falsehoods. In short, it all depends on what the student wishes to express. Some of the best work done has been produced from negatives made purposely thin, which have at the same time been true in tone, and full of breadth. The density of a negative can be increased by intensifying the negative; but it must not be forgotten that intensification does not, in our opinion, correct the *tonality*, this is a matter of great importance which has been overlooked. From this it will be seen that a negative that requires intensification is worthless for artistic purposes, and had better be destroyed at once. But as intensification may be required for some particular object, we must caution the student against the ordinary perchloride of mercury and ammonia intensifier. In many cases it acts well enough, in many others it acts unevenly and in patches, and in all cases it is not permanent. The best intensifier we know of is Dr. Eder's, whose formula we give— Intensification. Dr. Eder's intensifier.

℞	Uranium nitrate	15 grs.
	Potassium ferricyanide	15 grs.
	Water	4 ʒ

Wash the plate thoroughly after fixing, so that no hyposulphite remains, and immerse in the intensifier. It works up the scale from the lower tones, which is an advantage over any other. To remove all the hyposulphite of soda it is well to treat the plate before using the intensifier, as Captain Abney directs. A drachm of a 20-vol. solution of peroxide of hydrogen should be mixed with 5 oz. of water, and the plate soaked in it for half an hour, and then washed.

The student will find that for certain effects he may intentionally produce a slight fog over his plate, as has often been done with very good results; but if his plates are unintentionally fogged, they are ruined. Fog is due to light having had access to the plate, either during manufacture, during exposure, or during development. By developing an unexposed Fog.

plate it can be proved whether it was fogged during the manufacture, as in that case the plate turns black. If the fog is caused by a leaky camera the edges of the plate, which are generally clear glass, are not fogged, for they have been hidden behind the rebate of the dark slide. Light coming through the dark slide shows itself in lines or patches, and is not general. If all these sources have been eliminated, the dark room must be suspected. This is tested by putting a plate in the slide, drawing the shutter out half way, and exposing the plate for a few minutes to the developing light. If the exposed half fogs, then the dark room is to blame.

Red fog. Green fog. We have only met with this phenomenon once, and that was in developing a uranium plate. This is green by reflected light, and red by transmitted light. It is generally deposited at the corners of the plate and round the edge.

Yellow and brown fogs. Are rarely met with, and are yellow and brown by *reflected* light, whereas stains are coloured only by transmitted light. The student can easily distinguish between fogs and stains in this way. We have been very successful experimentally with Captain Abney's method of clearing off green fog. He recommends the following solution to be used after fixing :—

℞	Ferric chloride	50 grs.
	Potassium bromide	30 grs.
	Water	iv ℥

The plate should be well washed after this treatment, and developed up with the ferrous oxalate developer.

But such plates are not always saved artistically by the method, for the tonality may be thrown out, and the texture of substances is nearly always damaged.

Frilling. Is due to the expansion of the gelatine, and will rarely occur if the plate be put in the alum bath before fixing. The gelatine can be made to contract by soaking in methylated spirits of wine.

Blisters. Are of rare occurrence, and will dry out if the plate be carefully handled and washed in alum, as directed.

They may be treated locally with methylated spirit, which causes the gelatine to contract.

Dense negatives.

The best reducer we know of is Dr. Eder's. He recommends the use of—A., one part chloride of iron to eight parts of water. B., two parts neutral oxalate of potash to eight parts of water. A well-known authority on photographic matters, Dr. H. W. Vogel, says, "Both solutions keep a long time without deteriorating. Immediately before using, equal parts of A. and B. are mixed, forming a bright green solution, which keeps well for several days in the dark, but decomposes in the light. Of this mixture a little is added to a fresh and strong solution of 'hypo.' In difficult cases 1 part 'hypo' and $\frac{1}{4}$ to $\frac{1}{2}$ of iron solution are employed. The plate to be reduced is placed in this solution. The image weakens quickly and uniformly. The plate is taken out and washed just before the desired reduction is reached, because the action continues during the washing, gradually diminishing under the stream from the tap. This reducer acts on plates developed either with 'pyro' or 'oxalate,' and does not destroy the details in the shadows like cyanide. There is also less tendency to frill than with the cyanide bath."

Reducers, like intensifiers, should not be resorted to, unless in case of a very valuable negative, for it must never be forgotten that, though the printing density is reduced, the tonality is not corrected.

Yellow stains.

Due to the developer, are easily removed by Edwards' clearing solution, which we have found most effectual—

℞ Sulphate of iron	ʒ iii.
Alum	ʒ i.
Citric acid	ʒ i.
Water	O i.

Transparent spots.

Are due to dust in camera or slide, or to using the "hypo" bath too long. If the spots have sharply defined edges, they are due to air bubbles forming at the beginning of development.

Halation.

This is a bug-bear we have had little experience of, though we have taken many interiors. The only occasion

on which we met with it was once when the plate was over-exposed on a stained glass window, containing much blue in it. If a large stop be used, and the exposure kept as short as possible, our experience is that no halation need occur. If, however, the student fears it, and there is always a danger of it where any bright lights act on the film, he should, with a squegee and some glycerine, apply a piece of dark carbon tissue to the back of the plate; this is easily stripped off before development.

Defects due to damp. All plates should be kept in a dry place, and whilst travelling it is as well to keep them in tinfoil. The effect of damp is to produce patches, which either do not develop at all, or develop unequally.

Removal of varnish. This is easily done by putting the plate into hot methylated spirit, and rubbing the varnish off with cotton wool.

Sea air. It has been said that sea air affects gelatine plates, this has not been our experience.

Dirty backs. The backs of the negatives, which are generally dirty, should be cleaned by scraping, and then rubbing up with a rag moistened in hot water, or preferably, methylated spirit. The negatives should be kept in a dry place, in grooved cardboard boxes. Wooden boxes should not be used for storing either plates or negatives.

Marblings. Are due to a dirty fixing bath; or to an uneven action of the developer arising from not rocking the plate, or to adding the alkali to the developer in the dish and not thoroughly mixing them before putting in the plate. The clearing solution removes some of these.

Prolonged and patchy fixing. Due to the alum bath being used before "fixing" in plates from which the developer has not been thoroughly washed. It can be remedied by washing and swilling the plate in water just rendered alkaline by ammonia, and then fixing as before. We once had a plate which took several hours to fix even after this treatment.

Limpet-shell markings. We have had these appear in a few negatives some months after development. We know of no remedy for the defect; nor do we know the cause, but believe it to be due to hyposulphite of soda left in the film.

Deposit on film. This is sometimes met with after the imperfect washing

out of hyposulphite of soda; or sometimes whilst the negative is in the fixing bath, if it has been in the alum bath previously, and not thoroughly washed. Sulphur is deposited. The remedy is obvious.

Metallic patches.

Coloured metallic-looking patches appear at times near the edges of the plate, which may, or may not, be accompanied with fog. We have often observed these patches in plates which have been kept a long time. There is no remedy if they are unaccompanied by fog, but if fog is present, the ferric-chloride solution will generally remove them.

Scratches.

On the back of the negative show as dark lines in the film.

Undeveloped islands.

Rarely, we have met with small patches which seem to have refused to develop; they are generally circular. Captain Abney says they are due to the use of chrome alum in the emulsion. There does not appear to be any remedy for this accident.

Dull spots and pits.

In one batch of plates we were greatly troubled by these faults, one of the plates being covered with pits as thickly as if it had been peppered with a pepper-box. Captain Abney says they are due to the use of gelatine which contains grease. They ruined a whole series of fine negatives for us once. These complete the enumeration of the accidents likely to occur during development.

Varnishing.

We shall now presume that the student has thoroughly dried his negatives, after having developed them. Before storing them, however, he must varnish them, to protect them from scratches, and especially from damp, for gelatine, being very hygroscopic, easily absorbs moisture. At times, when warming an apparently perfectly dry negative over a flame, preparatory to varnishing it, a slight steam can be seen to arise, due to the evaporation of the moisture in the film. This moisture in the gelatine would of course in time lead to decomposition, and ruin the image; for these reasons, then, all negatives should be varnished. Before "varnishing" each negative should be carefully brushed over with a camel's-hair brush. Now it is obvious that many of the varnishes used are more or

Dr. Carey Lea's Varnish.

less non-actinic, as Dr. Carey Lea has proved; he, therefore, recommends the following:—

℞ Bleached lac	3 x.
Picked sandarac	3 v.
Alcohol	℥ xii.

Let the lac dissolve in the alcohol, then filter, first soaking the filter paper with alcohol. Pour slowly, and if necessary at the end add 1 ℥ more of alcohol to enable the rest to pass. Next add the sandarac to the filtrate and refilter, using of course a fresh filter.

Warm the plate gently, and, holding it in the left-hand bottom corner between the thumb and finger, pour a pool of varnish on to the plate that will cover about one-third the area of the plate, then let it run to the right-hand top corner, then to the left-hand top corner, then to the thumb, and finally drain off at the right-hand bottom corner into a filter. Then place it on a drainage rack, till just set, when rewarm by the fire, otherwise it does not set hard and smooth.

Roller slide.

Since paper negatives and a roller slide were suggested by Fox Talbot, and made fit for use by Blanquart-Evrard, several ingenious persons have been trying to improve upon these early attempts. From time to time, during the last fifty years, various workers have announced old ideas as new discoveries, nor have these been confined to roller slides and paper negatives, but extended to many other photographic processes. That no one can claim any originality of discovery on this head since Talbot and Evrard is obvious; only perfected methods can be claimed. There have been many of these introduced, but none worth discussing until that offered by the Messrs. Walker and Eastman. They have perfected Talbot's and Evrard's work, and though they have numerous imitators, their work is *facile princeps*.

Paper negatives.

Now the student will naturally expect us to give an opinion on these paper negatives. For many photographic processes they are of course invaluable, but for artistic work our opinion is that they are not equal to the ordinary method. These remarks apply equally to

the various flexible films which have lately been introduced.

For hand cameras, we should think, film negatives would be very useful, and for small studies such as they produce, would do well; but then such are not pictures. A picture must be perfect in all points, and for this reason the films will not as yet answer. They do show grain, say what people will; we have examined dozens of the very best, and that is our opinion. Besides this, they are liable to the defects common to paper, such as transparent spots, and the defects common to films, such as markings and stains, and in addition to all this there is the liability to injury of the negative after development, in the subsequent processes of oiling and stripping, if stripping films be used. The quality, too, of the picture is not equal to that of an ordinary negative. Why it is so we cannot explain. What the future of these processes may be we do not pretend to say, but for the present we feel assured that the finest quality of work is to be obtained on a glass support. For ordinary touring purposes no doubt the roller-slide and flexible films have every advantage, but with any but the art side of the question we have nothing to do. In artistic work, all hap-hazard results or accidental effects must be carefully eliminated. Lightness, printing from either side, and a good retouching basis are no considerations for the artist, he wants none of these things.

Ortho-chromatic photo-graphy.

There still remains, however, a very important point from the art point of view, as regards tonality, for as the student who has read his chemistry knows, the different parts of the spectrum act differently on the different haloids. The effect of this has been to destroy true tonality, thus a yellow flower comes out black if taken on ordinary plates. To remedy this dyes have been used which absorb the weakly acting rays, and thus has been made one of the greatest advancesin photography, both scientifically and artistically. This ortho-chromatic photography, has engaged the attention of experts, and Abney, Vogel, Eder, Ives, Bothamley, and Edwards are hard at work upon it now, besides many amateur scientists. We have

been for some time experimenting in this direction for artistic purposes, having begun with Tailfer's plates before any others were introduced into the English market. For the photographing of pictures Messrs. Dixon and Grey conclusively proved the superiority of the process by their exhibits at the Exhibition of the Photographic Society of Great Britain, in 1886. But the matter is different when landscapes and portraits from life have to be considered. It is with the wonderful protean aspects of nature that we have to deal when working from nature, and we feel the question is not one to be entirely settled in the laboratory, any more than are the rules of painting. Our method is always to work out of doors, noting, as far as possible, the conditions and judging the results by the prints, and though such experiments are far from conclusive, we can at present say that the ortho-chromatic plates are nearly correct in the rendering of tonality, but not perfect, the reds overrun the other colours, and are too strongly rendered. In fact, the reds and greens are not correctly rendered, and even if the correct values of the spectrum are rendered in a laboratory, this will not and does not give the relative tones of nature. This is the point which must be remedied. We have not yet been able to apply the results of Captain Abney's latest experiments to practice, but hope shortly to do so. Undoubtedly ortho-chromatic photography alone will be used in the near future, but just at present it is not cut-and-dried enough for all practical purposes. The student, however, must use these plates. They are supplied by Messrs. B. J. Edwards and Co., from whom all working directions can be obtained. We prefer the glass screen to the stained collodion screen, if we can rely upon getting a very pure piece of yellow glass optically ground. The student must be very careful in this matter, for a bad screen will ruin all his work, and he must use screens of different densities as required.

Final. Thus it will be seen that in every operation the art-knowledge of the operator will tell. For example, let us suppose a camera set up with the lens fixed, before a beautiful landscape composed on the ground-glass screen

by an artist, then let us imagine that two photographers proceed to take each a plate of the picture. After the very first operation of focussing, stopping and adjusting the swing-backs; a mighty gulf will separate the two pictures; the gulf widens as the exposure is made, and finally in the developed plates they are no longer the same thing. One will be a sharp, commonplace fact, false in many parts, the other will, or may be, full of truth and poetry. Let a print be taken from each plate and presented to an artistically uneducated craftsman and to an artist, the craftsman will go into raptures over the sharp craftsman picture, the artist will do the same over the artistic picture, but the artist will not look for a moment at the craftsman's ideal, and this little matter any one can prove for himself. Let the student, then, strive to earn the artist's praise, and let him ignore the craftsman's, and value his opinion on these matters at the same price he would value his opinions upon any other subject where taste and refinement are called into question.

CHAPTER VIII.

RETOUCHING NEGATIVES.

Definition of retouching.

Retouching is the process by which a good, bad, or indifferent photograph is converted into a bad drawing or painting.

Theoretically, retouching may be considered admissible, that is if the impression can be made more true by it. There are, perhaps, half a dozen painters in the world who could do this, but no one else; Nature is far too subtle to be meddled with in this manner. We have discussed the question with many artists, and their verdict is the same as ours. It is the common plea of photographers that photography exaggerates the shadows, but we think it has been shown that if photography is properly practised, no such exaggeration of shadows takes place, and if it did, retouching would only add to the falsity in another way. This retouching and painting over a photograph by incapable hands, by whom it is always done, is much to be deprecated. The result is but a hybrid, and is intolerable to any artist. One fatal fact in all painted photographs, and one which for ever keeps them without the realm of art, is that the shadows, being photographic, are black and not filled with reflected colour as in nature and as in good oil painting. The same remark applies to mechanically-coloured photographs. Such abominations, from an art point of view may, however, be useful in the trades, for pattern plates and such things. Consider for a moment the habit of working up in crayon, monochrome, water-colour and oils. What does it mean? and how is it done? In some establishments the practice is for a

Working up in monochrome, oils, &c.

clerk to note down certain of the sitter's characteristics, such as "hair light, eyes blue, necktie black;" these remarks are sent with a photograph, generally an enlargement, to the *artist!* He, in a conventional and crude manner, makes necessarily a travesty of the portrait, and for these abominations the customer pays from 5*l.* to 20*l.* Consider the utter sham and childishness of the whole proceeding, and remember that a portrait painter of the greatest ability can only paint with the model *actually before him,* yet these workers-up, who are not artists at all, can paint from memoranda made by a clerk. It is astonishing to think there are people in the world foolish enough to pay for such trash. Even the very best oil painting done in such a way is but trash, and if the photographic base is so destroyed or covered over that none of it shows, it must then be judged on the grounds of drawing or painting as the case may be, and a sad thing it is when judged on these grounds. It may be said, "But painters paint posthumous portraits." Yes, they do, confiding public, but they paint them as sculptors model posthumous busts, but they do not call them works of art. We know several artists who are compelled by necessity and the vanity of human nature to execute these posthumous portraits, and we know, too, how they value such work. But it must not be forgotten what a gulf separates able artists from the third-rate "workers-up" for photographers. Moreover, true artists never attempt posthumous portraits on the top of a photograph, but simply use the photograph as as a guide for modelling, light and shade, &c., a quite legitimate use, both for painter and sculptor. The Photographic Society of Great Britain is to be congratulated on the stand it has made in the matter by not hanging any of these abominations on their walls, and it is to be hoped they will remain firm and never admit coloured photographs of any kind until the great problem of photography in natural colours be solved.

Posthumous portraits and busts.

Phot. Soc. Great Britain.

We have amongst photographers to-day persons who pride themselves on their skill in taking out of a photograph double chins, wrinkles, freckles, and all the

"High Art" photographers.

character of a face, and who call themselves, we believe, "high art photographers," mere flatterers of mankind's weaknesses are they, not even honest craftsmen. And not only do they thus mutilate portraits, but with their Chinese white and Indian ink will they, with all the confidence of the uneducated, touch up a landscape or a face with no model before them. Of tonality of course they never heard, and Nature they never knew. It was once our lot to judge the pictures at a Cambridge photographic exhibition, and we were not a little staggered by the audacity with which one noted "London firm" had touched up and worked upon an opal enlargement of Niagara Falls. The picture was very true and beautiful before those vandals had got hold of it, but, great Cæsar! what a sight it was afterwards, with its impasto of Chinese white, and its shiny gum polished, India ink deepened shadows! In short, a more meretricious production it has seldom been our lot to inspect, and this thing was exhibited by an University undergraduate! If such is the taste of an educated man, what can one expect from the rest of the world? Let, then, the student avoid all these meretricious productions as he would all vulgarities, such as eating his peas with his knife. No first-rate artist will allow his prints to be retouched; he would never be able to bear the look of them afterwards. That the idea of retouching springs from a wrong theory is evident, the improper use of lenses gave false drawing, and people were inartistically and sharply photographed, so that wrinkles, warts, freckles, and even the pores of the skin showed, and then arose the demand for a retoucher to correct all that, and one error led to another, although, without doubt, the false work of a retoucher is much truer than the false work of an uneducated operator. Certainly people do not see, at the distance a photograph is taken from, the wrinkles, spots, and other small blemishes, and they are too uneducated to see the falseness of tone which retouching engenders. Of all the photographers who talk glibly of art, we warrant scarcely one is able to distinguish between a bust carved by a stonemason, one carved by a mediocre sculptor,

Origin of retouching.

and one carved by a master, in fact we have proved this and yet they talk, talk, write, and lecture on art; while to an artist the difference between each of those three busts is as great as the difference between a mountain, a hillock, and a marsh. The public see the warts and spots and call them false, the greater falsity of tone and retouching they cannot distinguish. An etcher once remarked to us, "How is it photographers seem to do everything to make photographs anything but photographs?" And such is the case; the matchless beauty of a pure and artistic photograph does not satisfy their vulgar minds, and yet such is the only kind of photograph at which artists will look.

Artists on retouching.

It is now fifty years since Daguerre publicly announced Niepce's discoveries, and on the scientific and industrial side, photography has results to show nothing short of marvellous, but what has it to show on the artistic side? Of the thousands who have practised photography since 1839, and who are now dead, how many names stand out as having done work of any artistic value? Only three. One a master, who was at the same time a sculptor, namely, Adam Salomon; one a trained painter, but without first-rate artistic ability, Rejlander; and one, an amateur,—Mrs. Cameron. Besides these three there is no name among the numerous dead photographers worth a mention. And have matters improved? Well may it be asked by those who have the good of photography at heart, whether it will always be thus. We hope not; but if it is to be otherwise, some radical change must be made, and the blind no longer lead the blind. We have said, then, that of all the thousands of craftsmen who have practised photography and are dead, three names only stand out as having produced works to which we can apply the title artistic. Now let us see what those three have to say to the matter of retouching.

Adam Salomon.

Mr. Adam Salomon, though he strengthened certain parts of his negatives by artificial means, which in the hands of an accomplished artist like himself, was admissible, condemned retouching altogether. He says,

"Eschewing retouching with brush or pencil on the film, risking the further deterioration of the negative, I make light finish the task it has, from want of time, or bad quality, insufficiently done, and in such a manner that no hand can hope to rival its delicacy and precision, and this is the only plan that a lover of his calling can justifiably pursue." So we see that a highly-trained sculptor, like Adam Salomon, *dared* not retouch, but only sunned down violent contrasts at first, and then printed in all the picture, so that it could not be detected; yet Adam Salomon, in our opinion, could have quite legitimately worked on his negatives, being as he was a highly-trained artist.

Rejlander.

Rejlander, not being a painter of great ability, but having a painter's training, tried all methods until he arrived at the legitimate scope of photography, then he came to the conclusion that retouching was inadmissible, and it must be remembered that Rejlander was more capable of retouching truthfully than any retoucher has been since, and yet he says, "I think the practice of retouching the negative a sad thing for photography. It is impossible, for even very capable artists, to rival or improve the delicate, almost mysterious gradations of the photograph. Magnify the photographic rendering of, say, the human eye, with a strong lens, and it is found to be almost startling in its marvellous truth. Magnify the retouched image, and it will look like coarse deformity. It ceases to be true. I have sometimes seen a touched photograph which looked very nice, but it possessed no interest for me; I knew it could not be trusted. I have been charged with sophisticating photographs because I combined and masked and sunned prints. But there is a great distinction between suppressing and adding; I never added. I stopped-out portions of the negatives which I did not require to form my picture; I sunned down that which was obtrusive, and where one negative would not serve, I used two or more, joining them with as much truth as I could. But I never attempted to improve negatives. I never believed that I could draw better or more truly

than Nature. I consider a touched photograph spoiled for every purpose." This, then, was Rejlander's verdict, and though from this we gather he had not yet thrown off the fallacy of combination-printing, yet he subsequently abjured that also. Even when he did use combination-printing, he practised it in a manner never equalled by his imitators, for like all imitators they have copied the bad qualities and left all the genius behind.

Mrs. Cameron. Mrs. Cameron, the last and least of the three, had knowledge and feeling enough also to eschew retouching, none of her work is retouched, just as she had knowledge enough to use a rapid rectilinear lens, although working in the wet-collodion days, for she evidently saw what escaped so many other workers, that the drawing was truer with that lens than with the quicker portrait lenses.

When it comes, by the means of retouching, to straightening noses, removing double chins, eliminating squints, fattening cheeks, and smoothing skins, we descend to an abyss of charlatanism and jugglery, which we will not stop to discuss. That such things pay and please vain and stupid people, no one denies, but so do contortionists please a certain public, so do jugglers and tight-rope dancers, and such like, but all that is not art.

Doctoring negatives. There are various practices of doctoring the negative by using paint and other mediums on the backs, or by grinding the backs of the negatives. These are, in our opinion, all unnecessary and harmful, the remarks on retouching apply equally well here. Such artifices may easily deceive and even please the uneducated, but the artist only sees them to despise and condemn them. The technique of photography is perfect, no such botchy aids are necessary, they take the place of the putty of the bad carpenter.

Spotting. Of course, spotting does not come under the head of retouching. The spotter does not attempt to modify structure or tone, but merely to render an unavoidable and accidental "blemish" less patent. All spots should be filled with red paint mixed with a little gum and water,

but care must be exercised in this operation, to put only just enough paint on to fill the hole.

Our parting injunction, then, to the photographer who would be an artist, is, avoid retouching in all its forms; it destroys texture and tone, and therefore the truth of the picture.

CHAPTER IX.

PRINTING.

HAVING his negative, the next thing our student will want to do is to print it; but before doing so, it will be necessary to decide upon the process he will use. The process.

This is a question of great moment, and one which will here be considered on purely artistic grounds. When first we began photography, we printed in all sorts of ways; but silver printing, on account chiefly of its unpleasant glaze, was soon discarded. Then we prepared some ordinary drawing paper, and printed on that, till one day we saw an album of views printed in platinotype. Their beauty acted like a charm, and straightway we took to platinotype. Still we felt that for portraiture, a red colour gave a truer impression. So we tried carbon, and practised it when necessary. Even now, when we look back on those days, we remember the intense pleasure carbon printing gave us. In the year 1882, when we first exhibited at Pall Mall, we sent four platinotype prints, and two silver prints. At that exhibition there were only three other exhibits in platinotype. Immediately after that exhibition we determined to give up all methods of printing except platinotype, and we have since steadily by example and precept advocated that process. When we were brought into contact with artists, and learned something of art, we knew the reason of what we had instinctively felt to be true. And now, after much experience and careful examination, in many cases in company with able artists, of all the printing papers and processes to-day employed, we emphatically assert that the platinotype process is *facile princeps*. We should

Silver prints.

Platinotype.

Carbon.

Platinotypes.

maintain this, even if platinotypes were no more permanent than silver prints, but here again, as in all good things, simplicity of manipulation goes with excellency, for there is no doubt that platinotypes are permanent, they will last in good condition as long as the paper on which they are printed. This fact alone would finally place the process at the head of the list. Since the introduction of the platinotype process various papers have been introduced into the market, with unglazed surfaces, for which the quality of permanency has been claimed. Several of these are old methods re-dressed, as the gelatino-bromide and chloride papers. But are these papers permanent? At any rate they do not give any truer tonality than silver prints, and this is a fatal drawback. We have examined hundreds of prints on gelatino-bromide and chloride paper, and they all give false tonality as compared with platinotype. The gelatino-bromide paper like all silver prints, whether matt or glazed, is false in tonality, the blacks are too black, and the whole picture lowered in tone. Then, again, as to the question of permanency, it is of course incontestable that silver prints fade, and as regards the gelatino-bromide paper, experiment has not proved it to be permanent. This is what one chemist, Mr. A. Spiller, says in the Year Book of Photography and Photographic News for 1888; writing on "Bromide *versus* albumenized paper," he says, "From the above considerations it may fairly be conceded that *under the same conditions* a bromide print will most likely remain intact longer than an albumenized paper print; but more than this, I am afraid, with the evidence at present at hand, we are not in a position to state. In offering this, it must be understood, that only under equally favourable circumstances is the bromide process likely to yield results more permanent than that on albumenized paper, for just as a gelatine plate or silver print fades when the 'hypo' fixer has been imperfectly removed, so again in the bromide process, if insufficient washing after fixing be resorted to, the resulting photograph cannot be expected to last long."

Fading of prints.

Mr. Spiller on gelatino-bromide prints.

Of course, such was the opinion of every photographer

who had thought the matter out, but we give Mr. Spiller's opinion since it is that of a specialist in chemistry. In conjunction with a noted landscape-painter we went carefully into this question of the different printing processes, for a book we were conjointly engaged upon was to be illustrated by photographs from our negatives. We soon determined, on artistic grounds, that there was nothing that could compete with platinotype. Before deciding, however, we wrote to a leading producer of gelatino-bromide papers, asking him if he could guarantee the permanency of prints on this paper. When the answer came it was evasive and unaccompanied by any guarantee. These gelatino-bromide papers are to be met with under different names, and though for certain trade or industrial purposes they may be invaluable, for artistic purposes they are inferior to platinotype. Carbon, though superior to silver printing, is still inferior to platinotype, for even when the glaze is got rid of, the method of the formation of the image, being sculpturesque, gives a falsity of appearance and an unnatural running together (like melted wax) of portions of the detail.

There is, then, in our opinion, for the art student, but one process in which to print, and that is the platinotype process discovered by Mr. Willis. Every photographer who has the good and advancement of photography at heart, should feel indebted to Mr. Willis for placing within his power a process by which he is able to produce work comparable, on artistic grounds, with any other black and white process. We have no hesitation in saying that the discovery and subsequent practice of this process has had an incalculable amount of influence in raising the standard of photography. No artist could rest content to practise photography alone as an art, so long as such inartistic printing processes as the pre-platinotype processes were in vogue. If the photogravure process and the platinotype process were to become lost arts, we, for our part, should never take another photograph. Mr. Willis

But here it is necessary to warn the student against the remarks of the platinotype company and many of their admirers, who maintain that for good prints

"plucky" negatives are necessary; and then follows the old story about "fire," "snap," "sparkle," and Co. As we have already despatched that gang, we will spend no more time over their funeral. For low-toned effects, and for grey-day landscapes, the platinotype process is unequalled, but the "fire," "snap," "sparkle" company think such effects bad, weak, muddy, and what not. Of course, the student will listen to nothing of this, but try for himself, and when he wants advice, let him ask it of good artists. We once showed a grey-day effect to a clerk at the Platinotype Company's Office, having previously had the opinion of some first-rate painters upon it; the clerk looked at it critically and said, "Yes, very nice; but look at this," and he took us to a frame hanging in the same room and pointed to a commonplace view, taken with a small stop in bright sunlight—a view, we believe, of a church or something of that kind; there was *his* ideal of what a platinotype should be. The print in question was about fit for a house-agent's window. No! Platinotype printers do not seem to know what a good thing they have. Their paper is as suitable and as beautiful for soft grey-day effects as for brilliant sunshiny effects, and it is to be hoped they will soon have their eyes opened to this fact, and cease to encourage the false notion that good, ergo plucky, sparkling, snappy negatives are those required for the use of the paper. The process, however, is not perfect, the only perfect printing process being photo-gravure, as we shall show presently; but of all the processes for printing from the negative it is the best; of all the typographic processes it is the best; and it is better than many of the copperplate processes.

Cold process.

Since writing this chapter, Mr. Willis has introduced a great improvement in his process, by which the print can be developed with a cold solution; but what is far more important, artistically speaking, the development can be controlled, for the developer can be applied with a brush, so that parts can be intensified or kept back at will. This is a great and distinct advance.

Ferro-Prussiate printing process.

The Ferro-Prussiate printing process, of course, does not concern us, blue prints are only for plans, not for art.

Our printing process, then, is to be platinotype and platinotype only, and as there is no use in swelling this work with facts already published, we advise every student to get full directions from the Platinotype Company, 29, Southampton Row, High Holborn, London, and to study them carefully. It is advisable to arrange the printing so that you are not compelled to keep the paper any time; get it fresh when required, therefore, and only as much as you require for immediate use. Before putting it in the box, drive all the moisture out of the calcium-chloride by heating it in a shovel, or old tray, over the fire, and dry the box thoroughly before the fire. Dry also all the printing frames thoroughly before a fire, also the rubbers, the use of which must not be neglected. Be sure you mix the baths and developer with pure *boiled distilled water only*, or else you will be apt to find a fine powder on the prints.

Hints for platinotype printing.

Be very careful not to place the prints in water between the washings. Above all, never use your dishes for any other purpose. Some amateurs, living in the country, complain that they cannot get up heat to boil a large enough quantity of developer for 12 × 10 prints. We found an excellent heating apparatus in the tin spirit lamps with treble wicks, supplied by Allen of Marylebone Lane, with his portable Turkish baths. With two of these lamps we had no difficulty in heating a developer for 24 × 22 prints. The dish can be supported by blocks of wood at the four corners, and raised to the height required by other blocks, or a tripod. The prints when taken from the washing water should be dried on a clean sheet, and are finally improved by pressing with a warm iron. For spotting, India ink is the most suitable medium. This, it is said, is permanent, and any tint can be got, but good India ink, like many other articles of trade, is a rare thing.

Lamps.

Spotting.

There are different kinds of paper sold by the Platinotype Company for printing, and the printer will of course choose the texture of paper that suits his subject. Delicate landscapes and small portraits should be printed on the smooth papers, while for strong effects, large figure

Texture of papers.

Colour.

subjects, and large portraits full of character, the rough papers are more suitable. The charcoal grey tint of ordinary platinotypes is apt to become monotonous in book illustration, and it is as well to vary it occasionally by using the sepia tints; these are quite suitable for landscapes and certain figure subjects. Directions are given by the company for producing these tints. A great desideratum is a red colour for portraiture, and it is to be hoped that Mr. Willis will see his way to producing a paper on which prints in what is called "Bartolozzi red" can be obtained. Red, though it does not give such true tonality, gives a truer impression of flesh and texture, just as sepia often gives a truer impression of certain kinds of landscape. But of course these tints must be used with judgment, and no one but a vandal would print a landscape in red, or in cyanotype. Having now disposed of the question of the printing process to be used, we must discuss some of the details incidental to printing.

Vignetting.

Whoever introduced the practice of vignetting was no artist, and the "dodge" was evolved from a misconception of the aims of art, or for commercial purposes. Its origin is obvious, the idea was taken from one of the incomplete methods of artistic expression, such as chalk drawing. In such methods the artist has a perfect right to leave the background untinted, or only to shade round the head so as to give it relief, but with a perfect technique like photography, vignetting is useless, nay inartistic and false, as it destroys all tonality. We get by this method a softly delicately lighted head, against a sparkling background, the two are incompatible, and not only that, but the photographer who vignettes is deliberately throwing away a most effective aid to perfect impression, namely, the relief effected by the reflected light from his background, and when you add to this the conventional shape of the head and shadows, the result is feeble in the extreme. Here, then, is another false god which has for years held sway. We ask the student, did he ever see a vignette painted by Da Vinci, Rembrandt, Holbein, Velasquez, Gainsborough, or Frank Hals? Such men knew too well the value of a background to throw it away; they

could not have painted a vignetted head. Look at their chalk drawings, and the case is very different; there they were dealing with an incomplete method, and kept rigidly within their bounds. In our early photographic days, we learned printing from a "professional" photographer, who did an extensive business in vignetted heads, and it was a source of great amusement to us to watch the mechanical application of the vignettes by the "head" printer. This is of course another source of the mechanical appearance of ordinary photographs; for by vignetting fifty different heads a certain uniformity must result, as in a regiment dressed in uniform, with of course the fatal result, the loss of all individuality, character, and of course art. The few photographic portraits that we have seen worth studying were certainly not vignetted. Mrs. Cameron did not vignette, she knew better. That people demand vignettes and pay for them is nothing to us; let photographers sell them as they do scraps and chromographs, and other fancy articles, if it please the childish and vulgar, but let them not be called works of art, for on the contrary they are certain indices of bad taste. Vignetting might be admissible in certain decorative cases in book illustration, as when a landscape decorates an initial letter, but in pictures, never.

Combination printing.

The simplest application of this method is the printing of a cloud into a landscape from a different negative. Though it is far preferable to obtain the clouds on the same negative, and this is quite easy in orthochromatic photography, it is, if you use great judgment, admissible to print in clouds from a separate negative, but this requires an intimate knowledge of out-door effects, and the clouds must be taken in a particular way. Printing in clouds is admissible because, if well done, a truer impression of the scene is rendered. But the ordinary way of taking cloud negatives is much to be condemned. The practice is to point the camera to the zenith, if need be, to focus sharply, to to use the smallest stop, develop and select for final use according to the lighting, indeed, not always being very particular on that point. But, by elevating the

Cloud negatives.

camera a point of sight is taken different from that employed in taking the landscape; by focusing sharply, often with a lens drawing falsely, the clouds are rendered false in tone and false in drawing. All this an artist detects in a moment, a photographer never. The first necessity, then, in taking cloud negatives is that the point of sight shall be that usually chosen for a landscape; the second that the clouds shall be so focussed and developed that their tonality shall remain true; and the third and most important point, that the cloud form shall be harmonious with the landscape. The very simplest truths of nature are daily ignored by photographers in the works they exhibit. There are often three, or even four suns in one landscape, or at least the evidence of them; mighty *cumuli* float over lakes where there is no ripple, and yet there is no reflection; or, as we have seen, reflections of clouds have been printed in where there are ripple marks; or heavy *nimbi* lighted from one direction are placed over *cirro-cumuli* lighted from another direction; or, again, a setting sun sinks to rest over wave-broken water, reflecting glints of light from exactly the opposite direction.

How to take clouds.

Of course, then, the best way, if a cloud negative is wanted, is *to take it at the same time as the landscape and from the same point of view,* getting as much as possible the same impression as seen in nature. The

To print in clouds.

exposure must of course be by a shutter set as quickly as possible. We think the best way of printing in clouds so obtained, is to take a piece of damp tissue paper, the size of the negative, gum it round the edges to the back of the negative, then with some blacklead and a stump to blacken the sky out when the paper is dry, carefully following the contours of those objects which stand in relief against the sky with his lead pencil. In this way you can with marvellous accuracy stop out the sky, and the work being on the back of the negative and in pencil, the contours still show the mingled decision and indecision of nature. The print is then taken, and afterwards the cloud negative is arranged as desired, the sky-line being covered with cotton-wool and the rest of the exposed landscape by a black cloth. No special printing frames are required for this purpose, only one a

size or two larger than the negative you are printing from. Cloud printing, as we have said, is the simplest form of combination printing, and the only one admissible when we are considering artistic work. Rejlander, however, in the early days of photography, tried to make pictures by combination printing. This process is really what many of us practised in the nursery, that is, cutting out figures and pasting them into white spaces left for that purpose in a picture-book. With all the care in the world, the very best artist living could not do this satisfactorily. Nature is so subtle that it is impossible to do this sort of patchwork and represent her. Even if the greater truths be registered, the lesser truths, still important, cannot be obtained, and the softness of outline is entirely lost. The relation of the figure to the landscape can never be truly represented in this manner, for all subtle modelling of the contours of the figure are lost. Such things are easy enough to do, and when we first began photography we did a few, but soon gave it up, convinced of its futility. Rejlander, though he tried it, soon saw the folly of such play, and he is the only artist we know of who used it. Mrs. Cameron and Adam Salomon never indulged in such things that we know of. Some writers have honoured this method of printing by calling it the highest form of photographic work. Heaven help them !. The subject is hardly worth many words, for though such "work" may produce sensational effects in photographic galleries, it is but the art of the opera bouffe.

Combination printing.

Rejlander.

In printing, variously shaped masks are used. There is no objection to them, but in our opinion they do not in any way improve the subject, although they do not spoil it like vignettes do.

Masks.

Besides all these, there are machines for producing imitation enamel portraits in basso-relievo and cavo-relievo, but all such ideas are false in theory, and the results inartistic hybrids unworthy of any serious consideration.

Here, then, we come to an end of the subject of printing, and in our opinion the student should consider himself fortunate indeed in having so beautiful a method as the platinotype process with which to work.

Final.

CHAPTER X.

ENLARGEMENTS.

Enlargements.

THE best enlargements made for the trade are made from very sharply-focussed negatives. In fact, some of the best enlargers take up the negative and examine it with a small magnifying-glass, and if any of the outlines are woolly they will not promise a good enlargement. This, then, shows that a small negative must be taken very sharply if it is to produce a good enlargement; that is, it must be taken purely from that point of view, all artistic considerations being thrown aside. It is obvious, then, from what we have already said, that this is undesirable, for every negative should be suited to the subject.

Increased falsity of drawing.

Enlarging, too, of course increases all falseness in drawing; if the drawing of the different planes is wrong in the small negative, it will be still worse in the large negative or print.

Enlarging haphazard.

But, it will be argued, and justly, that sometimes an enlargement is more artistic than the small picture from which it was produced. This is sometimes, but rarely, the case; and when such is the case, it is the *result of chance*. You could never be able to take a negative in a particular way so that you know for certain it will be improved by enlarging so many diameters, and therein lies the inherent defect which unfits this process for artistic work.

The method.

The actual process of enlarging is very simple, either by artificial light or daylight; but it is in our opinion a needless and undesirable proceeding.

We have made many experiments in this direction,

but we have never yet been able to get an enlargement as fine in quality as the direct photograph. All the little subtleties which give quality to the work are either lost or are only obtained accidentally. Not long ago we saw a beautiful portrait—an enlargement, the print from the small negative of which was very poor, and no one was more surprised at the improvement in the enlargement than the photographer himself, but he could never make sure of doing the same thing again. Therefore eschew enlargements. A picture of fine quality, quarter-plate size, is worth a dozen enlargements 24 × 22.

An example.

It is only in certain very limited effects that the tonality will be true after enlargement, and that of course constitutes a fatal objection.

Tonality.

CHAPTER XI.

TRANSPARENCIES, LANTERN AND STEREOSCOPIC SLIDES.

Transparencies.

For industrial and educational purposes transparencies of all kinds are valuable, and we shall touch upon them elsewhere. With lantern slides our student has nothing to do.

Lantern slides.

A lantern picture is an optical illusion, and lantern slides are toys when they do not serve lecture purposes. For lecture purposes they are of course invaluable, but they have no place in art, neither have stereoscopic slides. They all rank with the camera obscura, the diorama, and the panorama.

We say all this because a beginner must be cautioned against paying any serious attention to these subjects if his aim be to become an artist. Art is much too serious for her devotees to trifle with any other subject, and besides the making of lantern and stereoscopic slides is apt to have a bad effect on the beginner. His attention becomes centred on the production of pretty things —a neat, small, superficial prettiness pervading all the work of good lantern-slide workers. Conventional composition and Birket-Foster prettiness are the lantern-slide maker's beau-ideals; and of course these qualities are very admirable for lantern slides, for without them they would have but little attraction; but they are quite distinct from, and very, very far removed from, having any connection with fine art.

We know many artists who photograph and value photography *per se*, but we have yet to meet that one who deigns to make lantern slides except for drawing from. It has been said that the appearance of stereoscopic pictures is wonderfully true; this is of course not

Stereoscopic slides.

the case. There is a lustre, false tonality, and apparent illusion, which to an artist makes them anything but true. In short, until photographers do away with much of the "play" of their art, and look at it seriously, they cannot hope that highly-trained artists will join in with them.

Lecture purposes.

For scientific lectures of course lantern slides are invaluable, and for this purpose they should be untouched; but we cannot help smiling when we hear of producers of slides claiming for their work the title of "artistic," *because* they are untouched and true. Absolute truth is not necessarily art, as we have often pointed out, and as Muybridge's photographs prove.

Let our student, then, avoid these snares, unless he wishes to cultivate what has been aptly called "Handkerchief-box art."

CHAPTER XII.

PHOTO-MECHANICAL PROCESSES.

Photo-mechanical process.

From our earliest photographic days we always felt that all "ordinary" printing methods, however good in themselves, would finally have to give way to photo-mechanical methods, as all processes are called by which the negative is reproduced. All the photo-mechanical printing processes may be divided into two great classes:—

Classification.

A. Processes in which the aim is to produce diagrams.

B. Processes in which the aim is to produce pictures.

For the first purpose any of the methods are useful: that is, typographic processes, where the block is set up with the type in the printing-press; the collotype process, where the prints are subsequently mounted on paper, or interleaved in a book; and the photogravure process, where the plates are introduced between the leaves of a book.

Diagrammatic plates.

It is obvious that when the aim is diagrammatic, brilliancy, sharpness, correct drawing, and the truthful rendering of texture are the requisites, as in the reproductions of negatives from nature to illustrate scientific works, books of travel, &c., then these are the main points to be considered; and when to these considerations is added the question of cost of production, it is evident nearly all the processes worth mentioning which are now in existence will serve one or other, or all such purposes. But when

Art blocks.

the question comes to be considered from an artistic point of view, the matter is totally different, for it is a *sine quâ non* in this case that all the artistic quality of the original photograph be preserved. Cost must not be considered. From the art point of view alone, then, shall

we briefly discuss these processes. As we said in a former chapter, of ordinary printing papers the platinotype is alone worth considering for this purpose, but for book illustration a serious objection to its use is its monotony. For, although there are two tints, the charcoal grey and the sepia, the gamut of colour is very limited; a serious matter this, for our experience leads us to believe that there is a particular colour and tint especially suitable to each subject. Another objection to all ordinary printing papers is the want of relief in the gelatine film of an ordinary negative, a want which gives a certain flatness in the resulting print, when compared with a print from a copperplate where the cavi-relievo is deeper. Relief in the block undoubtedly has a great influence on all results, and in all the photo-mechanical processes "*depth*" is an essential, and the best processes are those in which the printing plates have the deepest surfaces. Another fact which renders platinotype less valuable than photogravure is that there is always a certain amount of "sinking in" of the image, as there is with a painting on canvas; but a painting can be brought up by varnish, a platinotype cannot.

Platinotypes.

Let us, then, examine the various processes, and see which will serve our purpose.

For artistic reasons we are of the opinion that Collotypes, Woodburytypes, and all such methods, are undesirable; and this we say deliberately, after long study of the subject, for in supervising and choosing illustrations for the books which we have illustrated we carefully examined specimens of nearly all the photo-mechanical processes extant. We say this, although one writer on the subject of photo-mechanical processes has given out the opinion that the ideal process is one in which the resulting print will be a facsimile of a "silver print;" but of course such a remark is absurd, and is in keeping with the rest of the compilation in which the statement appears.

Collotypes, Woodbury types, &c., not durable.

For the benefit of the student, then, we say there are but two processes to be considered for book illustration—a typographic block to be printed with the text, and a

Typographic processes.

copperplate. The typographic block has the whites lowered like a woodblock ; and as it is printed in the ordinary way, with the type, there is no extra trouble or cost in the printing. With a copperplate, on the other hand, the plate must be carefully inked and wiped, and each print separately pulled by hand, the difference in time taken by this process, and consequently the cost, is therefore greatly increased.

After a careful examination of all the typographic processes we have no hesitation in saying that there is *not one* satisfactory in the market. When the original picture is not travestied and cheapened by mechanical-looking crenellations and stipplings, it is marred by obvious hand-work and by falsity of tonal translation. Any photo-mechanical process, to be perfect, must, as we have all along maintained, require no retouching of any kind. All the typographic blocks, too, are too shallow; hence in the rough working and pressure of the printing-press all tonal subtleties are lost in smudges. They many of them serve remarkably well for rough diagrammatic purposes, but for artistic purposes there is not one we can recommend when the object is to reproduce pictures taken from nature. For facsimile work they serve the purpose. A first-rate photo-mechanical block to print with the text in the ordinary printing-press, which is entirely the result of a chemical process, is a great desideratum, and it is a problem which experimenters in this direction will do well to study. Not only is it that there is no typographic block adequate, but in addition, when the present process is employed for diagrammatic purposes, or to satisfy the pictorial standards of the untrained in art, they are terribly marred by crude retouchings and daubings with Chinese white, until such travesties of nature appear that are only to be equalled by some of the "finishing artists" of the photographic studio. Yet, bad as these block processes are, they are infinitely better than the second-rate woodcuts made from photographs. Day after day, books appear illustrated with woodcuts from photographs, in which the woodcutter has effectually ruined all the beauty of the photograph. If the student,

A great desideratum.

then, should ever be in the position of having to choose between the facsimile woodcuts of English woodcutters and photo-mechanical block-work, let him choose the latter as the lesser evil; it is better than any except the American school of facsimile woodcutters. And here it may be well to note a dishonest practice which is daily becoming more common, with writers of books of travel who buy photographs abroad, and unscrupulously have their books illustrated with them. We know of certain illustrations which are advertised as being from wood-blocks done from *sketches by the author*. Quite recently a book of travel appeared illustrated with third-rate woodcuts purporting to be done from sketches by the author, which were really done from photographs purchased in the shops abroad. We know of one case where this was done in England, the photographs pirated being English photographs. Should such a thing ever happen to the student, he must, as a duty to the photographic world, prosecute without compunction, and exact the utmost penalty of the law. Such dishonesty is one of the most despicable forms of thieving.

Photo-gravure.

But to return to our subject. As we have said, we felt from the first that photogravure was the ultimate goal to be reached; that was the final end and method of expression in monochrome photography. We argued the matter out with many painters, and they agreed with us, as did they agree that the process of reproduction must be the *result of chemical changes only*—that no retouching was admissible, or a hybrid would be the result, and a hybrid is detestable to all artists, although we have recently seen writers untrained in art matters advocating a photo-engraved plate as a basis for etching or mezzotinting. Having decided, then, on these points, we determined to try the photogravure processes of the various firms. On inquiring from the best English and French firms, we found that but very few, in most cases no landscapes from nature had been reproduced in this way, although a few portraits had been done. We carefully examined the specimens (nearly all specimens of facsimile work) of thirteen different firms; in fact, all the firms practising

photogravure that we could hear of. From this examination it was evident that however good many of the processes were for facsimile work, but few were adaptable to our needs. Having at last settled on the four apparently most suitable processes, we began our studies. Negatives were sent to each of the firms, of whom only one had ever attempted reproducing a landscape direct from a negative from nature. The proofs came, and were in *every* case most unsatisfactory; they had all been barbarously retouched, all the tonality *had been* falsified, faces against the sky were made lighter than the sky, faces were roughly outlined with an etching-needle, high lights were scraped away needlessly, and shadows barbarously deepened with the roulette. Our battles then began, and we demanded plates free from retouching; the voluminous correspondence we had on the subject would afford amusement. Various firms protested—it couldn't be done; it was absurd; was art the result of a chemical process? and Heaven knows what! However, we persisted with inflexibility, and though we had to accept in some cases the least visibly retouched plates, we finally gained the day all round, in so far that all the firms supplied us with plates with no visible retouching. Thus was instituted a new departure, negatives from nature were reproduced, through our battlings, with no visible retouching; and although a few diagrammatic negatives had been reprodued here and there before us, we were the first to start the serious reproduction of negatives from landscapes and figure subjects which could be regarded as pictures *per se,* and not merely as topographical views.

But now the coast is clear, and the student can get his negatives done without visible retouching by asking for it. From an examination of these results it was soon evident that one firm, the Typographic Etching Company, produced plates immeasurably superior to those of any other firm, and in addition, they would guarantee their production *without retouching.*

Typographic Etching Company's process.

For reproducing negatives taken from nature, then, this process is *perfect,* and we cannot see how any photo-

engraving process will ever surpass it. Mr. Dawson and Mr. Colls are trained artists, and perhaps therein lies the secret of their success. It is perhaps invidious to select one firm for special mention, but as the results of the Typographic Etching Company are in every way so superior when artistically considered, we feel it our duty to record the fact here for the benefit of the student. Quite recently there has been much discussion on the vital question of "Photogravures *v.* Engravings," and some of the English firms have publicly announced that it is necessary to finish their work by hand, while others privately maintained the same fact. Mr. Colls, of the Typographic Etching Company, on the other hand, maintains that a plate, perfect in quality, can be produced without the aid of a touch by hand. Further on will be found a communication on the process by the engraver, Mr. Colls, who therein states that he can and does produce his work without any retouching.

Messrs. Dawson and Colls.

The Dawson process renders the light in the shadows better than any of the other processes, this being effected by the method of working, and, as a whole, the "quality" of the work is unapproachable, it beats mezzotint out of the field in its subtlety and delicacy.

And here we would caution the gentlemen of the press who have lately written so freely and so mistakenly on the subject of photogravure, that the best photogravures are *not* produced in France, but in England. Englishmen do not seem to know when they possess a "good thing."

English *v.* French photogravure.

We venture to say, without any diffidence, that for the reproduction of negatives from nature, Dawson's process is *facile princeps,* and to assert that for the reproduction of pictures, several of the English processes are equal to, if not superior to, the continental processes. This is also the opinion of several artists who have seen specimens of the work done in both countries. The process, as worked in America, does not give results equal to that done in England. For diagrammatic purposes, we consider all the English processes possess qualities of equal value.

Another new departure for which we had some

battling was a *minor* point, but an *important* one. It was on the question of lettering. It had been the practice of many of the firms to engrave in plain lettering beneath the picture, the name of the firm, and the words "negative by ——," and often in addition the word "copyright." This engraving, as it was usually done, gave a "cheap" look to the picture. We felt that the picture was injured by this procedure, so we insisted that our name should be cut in the picture, in a quiet manner, as an etcher would sign his name, and that no ordinary engraving should appear on the plate. In case, then, our student should at any time have any of his works reproduced, we will give him a few hints, for though the publisher does the business part, the artist always has the passing of the plates.

Hints for those having plates reproduced by photogravure.

When sending his plates, then, to be engraved, he should send a well-printed platinotype print with them, a print having just the effect he wishes for in the copper-plate. If clouds are to be introduced, the cloud negative should be sent as well. He will in due time receive a proof, which he must go carefully over, making any notes on the margin as to re-biting, &c. If it be retouched or utterly bad, it must be rejected. Of course, it is here evident that his art knowledge will come in, for if ignorant of art, how can he make remarks to the "biters" who are often artists? He must continue asking for proofs until he receives a satisfactory one, for no plate can be forced upon him if he can prove it to be wrong. If he have real grounds for objection, he will find the English firms most generous, for they take a pride in their work. They have, in some cases, made as many as three plates from a subject for us, with no extra charge, and this we could never get a French firm to do. When he approves of the plate, he signs the proof to that effect. Then comes the great question of "colour," that is the coloured ink to be used; for one of the great advantages in photogravure lies in the number of colours and tints of colours which can be used. Here, again, his artistic knowledge comes in, and he will find the effects produced by different colours are marvellous. Having, then, sug-

gested his colour and tint, he will receive proofs printed in them, and he finally decides upon the tint suitable for each plate, and these are kept as standards on a file. The matter of printing papers, too, offers great variety and scope for artistic selection; but here the student will find he has not a free hand, the publisher often limiting his choice in that on financial grounds. The student must see, however, that if India paper be used, an unsuitable tint be not selected. For example, India paper may be yellow or white, obviously then, if the plate is to be printed in bartolozzi red, white India must be used, and not the ordinary yellow-tinted India. The student must be careful when sending his platinotype print, to cut it exactly to the limits he wants the picture on copper. Copper-plates can be produced in this way from prints in cases where the ordinary negative has been broken. If the sky is not an important part of the picture, it is better to have it a flat grey tint, or delicately gradated. The student, of course, remembering certain physical truths, as, for example, that still water is, as a rule, lower in tone than the sky which it reflects, &c. The best test of relative value of sky and water is to turn the *picture upside down.* All these subtleties must be carefully considered, for a sky lower in tone than the still water reflecting it, would, with rare exceptions, be a fatal artistic error, and enough to condemn the plate. The details which thus go to make or mar a picture are countless.

This, then, is our experience of the photo-mechanical processes, and, as we make it a rule never to write on anything we have not full *practical* knowledge of, we have asked our friend, Mr. Colls, to write us some particulars of these processes. We have done this because there are certain misleading books in the market on the subject, written by men without such special knowledge as can only be obtained by a man who has worked at the process for years and at nothing else, and who is, in addition, an artist. Mr. Colls is both a specialist and an artist in this work. In our opinion the future artists who practise photography will also photo-engrave their own plates, which is greatly to be desired, but since these processes

W. L. Colls on photo-gravure.

are at present kept very secret, this knowledge cannot now be acquired. Nevertheless, we feel that the day is not far distant when every artist who expresses himself by photography will also bite his own plates and make his own blocks, and the prints will be published by print-dealers as etchings are now. This, in our opinion, is the only method which can give full artistic satisfaction. A final important consideration is the number of good prints which can be pulled from each plate. Dawson's plates, being bitten deeper, will obviously stand more wear and tear than the others, and will produce a greater number of good impressions. They think that at least 3000 good impressions can be pulled from each plate. We append Mr. Colls' remarks :—

METHODS OF REPRODUCING NEGATIVES FROM NATURE FOR THE COPPER-PLATE PRESS.

Preamble. "In giving a description of the various methods that are employed for reproducing photographs from nature by the copper-plate press, it is obvious that only those which are purely 'automatic' need be mentioned, as it is impossible to give a true rendering of those beautiful forms and delicate gradations of tone, which we see in nature, by any but automatic means. For so ever-varying and sudden are her changes, that it is by photography alone we are able to secure these effects, and having obtained them, we require a process which will give us *our* impressions, and one which will harmonize with printed matter when required for book illustration.

"This we have in the Intaglio plate, which gives the most perfect tonality, and possesses all the richness and quality of a mezzotint plate, with the same degree of permanency.

"For convenience of description the different methods of producing Intaglio plates may be classed under two heads—'Grown' and 'Bitten.' I will first mention the 'grown,' and will endeavour to point out the characteristics of the different processes, so that a com-

Grown and bitten plates.

parison may be made between them, with the object of determining the one best suited for the purpose. In all the growing methods the basis of the process consists in obtaining a gelatinous mould of the subject; the most usual and simple way being to develop a carbon print from a reversed negative on a polished copper-plate which has been previously silvered, to prevent the copper which is afterwards deposited upon it adhering; and to produce the grain which is necessary to hold the printing ink. The mould when wet is dusted over with powdered glass, sand, or the like, previously treated with wax or stearine, to assist its removal.

"When the mould is quite dry the gritty particles are removed by gentle rubbing, leaving the gelatine in a grained state. Plumbago is then rubbed well over the picture to render the mould conductive, and it is placed in the electrotyping battery and a stout cast taken. There is some little uncertainty attending the entire removal of the gritty particles, and great danger that in making the mould sufficiently conductive in the heavy portions, the fine work is destroyed by getting blocked with the plumbago. The former objection has been overcome by substituting powdered resins, which can be readily dissolved away without injury to the mould, and the latter by the introduction of a tissue containing granular plumbago, which while producing the necessary grain for holding ink, is one of the best conductors of electricity, so that no after-treatment is required.

"Similar to this is a process by which the grain is obtained by the action of light on a chemical substance, which crystallizes under the action of light, the crystals becoming larger the longer they are acted on by it. A deposit of copper is then made on the crystalline surface and a plate obtained.

"By these methods very satisfactory results may be obtained for certain classes of work where the range of tone is not great, they are more particularly suited for reproducing the works of early engravers, old cuts, etchings, pencil and crayon drawings, and similar work upon rough or grained surfaces. In fact, when printed

upon old paper, as is sometimes done in particular cases, so closely do they resemble the originals, that the most expert judge would have great difficulty in detecting the reproduction from the original; but for reproducing nature work, where the scale ranges from the highest lights to the deepest shadows, these methods are not suitable without much hand-work, which is ruinous to the faithful rendering of the subject, and the introduction of the roulette which is used to give the necessary depth does not improve the appearance, as the depth obtained by it is heavy, and lacking that transparency which is so desirable in all classes of work from nature. The great drawback to these methods is that the grain produced is upon the surface of the plate, standing up in innumerable little prickles, and the only way of working up a plate is with the roulette and scraper (the nature of the grain being unsuited for re-biting). These, added to the soft nature of grown copper, as compared to rolled or hammered copper, which is used in the biting methods, necessitates the greatest care in printing, and usually require very strong and sometimes forcing inks to give the necessary strength, and although a plate be steel-faced it will not hold out for a large number of impressions.

"There are other ways of producing a grain upon a gelatinous mould by re-sensitizing and, when dry, dusting over the picture brocade powder, either coarse or fine, as the subject may require; the mould being previously treated with vaseline, or a similar substance, to allow of the powder adhering, and exposing to daylight for a short time. The powder is then removed, and it is ready for the battery, after being blackleaded. As all the growing methods resemble each other so closely, I will not mention any others, but will proceed with a short description of the biting processes.

Biting process.

"A polished copper-plate, preferably a hammered one, is thoroughly cleaned, to remove all traces of grease, and is dusted over with powdered asphalt or resin, and the plate heated until the powder becomes partially melted. A carbon print from a reversed transparency is next de-

veloped upon the grained plate and allowed to dry. The unprotected margin is then painted round with asphalt, or other resist-varnish, and a wall of bordering wax placed round the work. It is then ready for biting, which is done with perchloride of iron, the bare portions being first attacked; water is then added, and the biting proceeds to the next tone, and so on, adding water when required, until the solution has penetrated the thickest portions of the film. The greatest care must be exercised during this operation, and a careful watch kept lest the action remain too long on any part. The biting should proceed in a gradual manner, so that the values are not exaggerated. The plate is then rinsed in water, the bordering wax removed, and the pigment cleaned off with a little potash ley.

"The biting of a plate resembles very closely the development of a dry-plate positive, as the action may be seen throughout the operation as each successive tone is reached. There are many variations to the above method, and each worker has his particular way of producing the grain, making the mould, biting, &c., but they are all based on the one just described. As the introduction of the biting methods as commercially worked is of more recent date than the grown, less is known of it, and those who work it most successfully keep it secret, and were it known there is little likelihood of its being satisfactorily worked by any but those experienced in copper-plate work, as long and careful study is necessary to master those minute details which are so important to ensure good results. For so delicate are the operations, that the changes of weather, temperature, &c., play an important part, and must be attended to.

"One of the great advantages a bitten plate has over a grown is that the scale is greater than by any other method, and the nature of the grain admirably lends itself to re-biting should any parts require deepening. That is, re-entering the original work by covering the grained surface with a protective coating, which resists the action of the acid etching-fluid, and deepening those parts that may require it, stopping out with

resist-varnish any portion where deepening is not wanted. This at once does away with the roulette, and the plate still maintains its original character. Re-biting is seldom required on a plate from nature, *for with care a plate can be made which needs no after-work whatever, and when bevelled and steel-faced is ready for the press, notwithstanding the assertion that has been made to the contrary, which recognizes the process only as a basis for skilled after-work.* It is needless to say that in all mechanical processes the very best negative is required to work from, for although a great deal may be done in the biting to counteract any defects in the negative, yet, if the negative is wanting in any particular, the after-result is sure to suffer. And here I wish to say that by the 'very best negative' I do not mean the ordinary photographer's beau-ideal, but a negative which gives a true impression of the object photographed, and is full of the 'quality' and subtlety of nature.

"The grain obtained on a plate which is bitten, differs materially from one that is grown, inasmuch as in the former it is below the surface, and in the latter upon it, as previously described; consequently its wearing capabilities are far greater.

Another biting method.

"Another biting method which possesses the merit of ingenuity rather than utility, is of converting an ordinary bromide of silver positive into chloride of silver, by the action of perchloride of iron and chromic acid. The film when damp is brought into close contact with the face of a polished copper-plate. Chloride of silver now rests upon the copper-plate, more of it in the vigorous or dark portions, and less of it in the lighter, and by a galvano-chemical process the chloride of silver decomposes, forming metallic silver and soluble chloride of copper, and producing depths corresponding to the amount of chloride of silver present. The energy of the action may be increased by moistening the film with a weak solution of chloride of zinc, and a battery current seems necessary to produce good results. As can be seen, the process is a very delicate one, admitting of little if any latitude in working, and, unlike the first-mentioned biting process,

will not permit of any work being put on the positive as is usually done in the first method for certain work where the darks are very hard and pronounced, and a great saving of after-labour avoided.

"It is advisable to say that the work done on the positive and plate to which I refer is done in connection with facsimile work, and not with 'nature work,' for in the reproduction of engravings the deep blacks of the engravings have to be reproduced, and since in nature there is no black of this kind we do not have to accentuate parts of the plates to produce it."

CHAPTER XIII.

MOUNTING AND FRAMING.

Mounting and framing.

HAVING our print, the next question is how shall it be mounted and framed. There can, of course, be no laws for this, but we feel justified in making a few remarks on this head.

Mountants.

The best mountant we know of is a weak solution of fine French glue. It acts better than any other mountant we have used, and we have tried several of the formulæ made with starch, arrowroot, and other compounds. Fine French glue holds firmly and there is no cockling after mounting. After mounting the prints are improved by being passed through a press, but this is by no means necessary. We shall now make a few remarks upon framing. In the first place it is our opinion that all cut mounts are inartistic. Mr. Whistler, not long since, made some remarks on this head, which are well worthy of attention. His objections to cut mounts were that the different tints of the picture, the gold border, and the cut mount, weakened the edges of the picture and detracted from its directness and strength, and this is no doubt true. For this reason we do not think platinotypes look well mounted on India paper, the edges are decidedly weakened, and as for mounting silver prints on India the result is most inharmonious. In our opinion then the print should be mounted upon white paper, preferably Whatman's rough drawing-paper, and for all pictures less than whole plate size, we should recommend a margin from three to four inches. A suitable moulding for these would be a

Framing.

bevelled moulding enamelled white. In all cases where the mount shows, it must be remembered that the colour should harmonize with the print. We saw some prints of Whistler's "Sarasate" mounted on plain black cabinet mounts, and they looked charming. As in that case, the picture came out nearly all black, the whole made a harmony in black. When the prints are mounted on cards as cartes and cabinets, there should be absolutely nothing on the face of the card. The hideousness of the photographer's name in shining golden letters is far too common. Nothing could look better for these small pictures than plain black mounts, with no word or letter or coloured line or any other embellishment. If the photographer is such a tradesman at heart that he must air his medals, let him put all that part of him on the back of the card. The method of stamping each photograph with the photographer's name is not less to be deprecated. For the industrial photographer some simple but artistic lettering should be chosen, and it should be printed small in one corner in Indian ink, which harmonizes with the greys of platinotypes. Any good die-cutter could supply an artistic stamp, and the charge, even if a little greater than usual, could not be very great. Or the photographer might cut out his name artistically in the gelatine film, but we recommend the former plan. The mounts for cartes and cabinets should have a margin of at least half an inch all round, as this adds considerably to the effect.

Moulding.

Mounts.

For platinotypes ranging from whole plate size up to 15 by 12, we prefer to frame them up closely, showing no mount. The frame we like best for large black and white work is a pattern we took from a painting by De Hooghe. These frames are made of mahogany, 2½ inches wide, and bevelled inwards, and have a rather broad slip of English gilt between the frame and the picture. The mahogany is stained black and polished. Pictures of 15 by 12 and upwards, should also be framed close up, and for the larger sizes we prefer gilt frames and simple mouldings with but little carving. Cambridge frames are simple, but do not look distinguished. Each picture should have a

Platinotypes.

Frames.

separate frame, and we trust that exhibition committees will one day see their way to enforcing this rule, which, besides ensuring a better effect, would prevent much bad work being hung. Sometimes six prints are hung for the sake of one or two, because they are all in one frame. We could scarcely believe, had we not seen it, the fact that some exhibitors have chronicled on a part of their frame the medals taken elsewhere by the picture. Such a proceeding, besides being vain and ill-bred, is apt to influence credulous judges. One would think it quite needless to say that this form of advertisement is not ornamental, nor does it enhance the virtue, qualities, or beauty of the picture. All artificial methods of mounting and framing are to be avoided. One of these is

Albums.

mounting on glass. All albums used for mounting prints should have plain pages, tinted in harmony with the charcoal grey of the photograph. All the vulgar decorations of ships, flowers, &c., which disfigure photographic albums of to-day should be rigidly excluded. The bad taste of the manufacturers of these things is only another proof of the bluntness of the æsthetic feelings of producers and buyers alike.

CHAPTER XIV.

COPYRIGHT.

Copyright.

The hazy notions existing among many photographers as to how to secure the copyright of their photographs, and other details, has led us to make a few remarks on the subject. In the first place the student is cautioned to secure the copyright of every photograph worth keeping, for we presume he will only keep pictures. This should be done at once; it is our practice to send the first rough print at once to the copyright office.

Method of copyright.

The photographer must write to the Registrar, Stationers' Hall, Doctors' Commons, E.C., for forms for copyrighting photographs. These cost one penny each, and a money order must be enclosed for the amount, stamps not being accepted. He will then receive the form as given on the next page.

On agreements.

The student must carefully note the footnote on the schedule, and be most particular in all cases when he sells his copyright in any plates to have a written agreement drawn up and signed *before* he fills in the copyright schedules. After this proceeding he can fill up the schedule as directed, and it is, of course, only on these occasions that he will be required to fill in columns two and three of the schedule.

The student should carefully study the matter of copyrighting, for he will find both publishers and photographers are, as a rule, ill-informed on those parts of the copyright law to which we now refer.

(COPY OF)

Memorandum for Registration under Copyright (Works of Art) Act.

TO THE REGISTERING OFFICER APPOINTED BY THE STATIONERS' COMPANY.

I, *John Silver*, of 0, *Regent's Street, London*, do hereby certify, That I am entitled to the Copyright in the undermentioned Work; and I hereby require a Memorandum of such Copyright [*or*, the Assignment of such Copyright] to be entered in the Register of Proprietors of Copyright in Paintings, Drawings, and Photographs, kept at Stationers' Hall, according to the particulars underwritten.

(*Every particular given must be clearly written.*)

Description of Work.	Date of Agreement or Assignment.	Names of Parties to Agreement or Assignment.	Name and Place of Abode of Proprietor of Copyright.	Name and Place of Abode of Author of Work.
Photograph entitled "Spring."			*John Silver,* 0, *Regent Street, London.*	*John Silver,* 0, *Regent Street, London.*

Dated this 28*th* day of *June*, 1888.

(Signed) *John Silver.*

N.B.—Office Hours from Ten to Four; Saturdays, Ten to Two.

N.B.—In all cases where a Painting, Drawing, or Negative of a Photograph is transferred for the first time by the owner to any other person, the Copyright will cease to exist, unless *at or before the time of such transfer* an Agreement in writing be signed by the transferee reserving the Copyright to the owner, or by the owner transferring the Copyright to the transferee, as may be the intention of the parties; and the date of such Agreement and names of parties must be inserted above, or registration will be no protection.

He fills in then all but columns 2 and 3, as in the dummy, and returns the form with a shilling, a copy of the photograph to be registered, and one penny for postage, when he will receive a receipt. Each photograph must be separately copyrighted. This 1*s.* 1*d.* protects the photograph for 42 years, or for the author's lifetime and seven years after death. The author (being a British subject, or resident within the dominions of the Crown) is entitled to the copyright of every photograph made in the British dominions or elsewhere. We shall extract a few pertinent remarks from an excellent article on copyright, which appeared in the "Year's Art of 1887:"—

The "author" of a photograph seems to be the person who actually groups the sitters, and "is the effective cause of the picture." An agreement is made with operators to obviate this reading of the law. "A photograph taken from an engraving is 'an original photograph' within the section." Thus a photographer cannot copy the photograph of an engraving in which there exists copyright.

The nature of the right.

The copyright given by the act is "the sole and exclusive right of copying, engraving, reproducing, and multiplying the photograph and the negative thereof, by any means or of any size. The fact that there is copyright in a representation of a scene or object does not prevent other people making an independent representation of such scene or object, but a photograph of groups so arranged as to exactly resemble a picture would be an infringement of the copyright of the picture, for if in the result that which is copied be an imitation of the picture, then it is immaterial whether it be arrived at directly or by intermediate steps." Photographers should pay great heed to this clause. For if a photograph or photogravure be so arranged or grouped as to resemble another already copyrighted, the law has been infringed. This is a most wholesome fact, for the veriest fool can go and arrange a picture after an artist has once shown him how to do it, for as in all art the originality is to select a beautiful scene in nature, there lies the difficulty.

Registration.

The photograph is not protected until it has been

registered, and if the picture is pirated *before* registration there is no remedy except in special cases.

Photographers should then register the first print they take from their negatives. Making lantern-slides from copyrighted photographs or photogravures is of course an infringement of the law, and should be severely dealt with.

Replicas. "If a picture or photograph is painted or taken on commission as the copyright (when reserved) is in the hands of the purchaser, the painter or photographer may not paint or produce a replica."

Remedies for infringement. Penalties. "For each offence the offender forfeits to the proprietor of the copyright, for the time being, a sum not exceeding 10*l.* When several copies are sold together, the sale of each copy constitutes a separate offence." It will be seen that a photographer could be ruined if a sale of say 1000 copies could be proved, and serve him right too.

Forfeiture. All pirated repetitions, copies and imitations, and all negatives of photographs made for the purpose of obtaining such copies, are to be forfeited to the proprietor of the copyright.

Damages. "The proprietor may also bring an action for damages against persons making or importing for sale unlawful copies, although the importation is without guilty knowledge."

Spurious pictures. Issuing spurious pictures.—If a photograph be falsely signed, it is an infringement, as it is to make any alteration in the work and then publish it as original.

It is commonly believed that, unless the word copyright be on the photograph, it is not secured. This is, of course, an error—as long as the photograph is copyrighted that is all that is required.

Pecuniary penalties. "Pecuniary penalties can be recovered by bringing an action against the offending party, or by summary proceedings before any two justices having jurisdiction where the offender resides."

Final advice. In ending this subject, we would impress upon the photographer that it is his solemn duty to exact the utmost rigour of the law, should he ever have his work pirated.

CHAPTER XV.

EXHIBITIONS.

EXHIBITING a work of art is publishing it, and the student will, when he obtains suitable works, very naturally begin to think about exhibiting them. The subject of photographic exhibitions is one upon which we have written many times in the photographic press. Photographic exhibitions are in a most unsatisfactory condition all over the world. Exhibitions.

At present, a society, or a corporation, or a private firm, for ends of their own, advertise an exhibition on purely financial grounds; they hope it will pay them, sometimes it does pay and sometimes it does not. The method of organizing these exhibitions is to get a list of patrons, generally a few of the "classes," a few photographers who are known, but whose fame more often than not is based on nothing solid, and is ephemeral, and finally perhaps the names of a few artists may be used to conjure with. Numbers of medals are advertised and all works must be sent *carriage paid.* The judges are then chosen, and in nearly all cases they are utterly incompetent. *No one can judge a work of art unless he be an artist.* The combined assurance and ignorance of those who accept what should be considered a serious office, is laughable and lamentable. Is our exhibiting student then going to submit his work to men untrained in art? If he does, he will find it either unhung, skied, or passed over in the awards, to make room for the pretty nothingness and false renderings of the craftsmen's ideal. The

whole judging business is such a blatant farce that the method of awards at photographic exhibitions is a stock joke among artists. We have repeatedly been to exhibitions with artists, and on nearly every occasion their opinion was that many of the most worthy pictures were passed over. Such a state of things is appalling, and where with that is coupled the notorious unfairness with which certain exhibitions are directed, as recent disclosures have proved, it is indeed lamentable. The tendency of all exhibitions as at present conducted is to *degrade* photography as an art; that is our deliberate opinion, after having for several years watched the system of making awards and having served on several juries of awards. A fatal error very common among photographers is to suppose that, because a man is an eminent scientist or a great authority on lenses, he is therefore a fit and proper person to judge *pictures*. The truth is he is one of the most unfit, for he is prejudiced, and his scientific knowledge has a bad influence on his judgment.

Abolition of medals.

In our opinion all medals should be done away with, all distinctions between "amateur" and "professional" removed; all pictures should be hung on the line, the hanging committee should be selected from those photographers who have proved themselves to know most about art; and all pictures should be exhibited in separate frames. If medals must be awarded in order to attract exhibitors, let the awards be made by artists of recognized position only. You have only to look at the medals awarded, to know what to expect; there is, with one or two exceptions, not the feeblest suggestion of art in them, they belong to the class of medals awarded to patent ice-cream machines, best refined arrow-root and dog-biscuits. If medals are awarded, each one should be a work of art, the original having been modelled by a good sculptor. The student then should pay no regard whatever to the awards made at exhibitions by photographers, the only real test of value is when the awards are made by trained artists, but it is rarely that even one artist serves on a jury of awards.

Medals as works of art.

If our student must exhibit, we advise him to mark his

work "Not for Competition." Gambling for medals has lately assumed alarming proportions, as the recent comments in the *Photographic News* prove. It is enough to disgust all artists, who will of course keep aloof from photographic circles, as they already do, as long as things continue as they are. Can the folly of human nature go further than when we hear of Mr. Guncotton, noted for his studies in collodion, or Mr. Chromatic, noted for his patent lens, or Mr. Gelatine noted for his emulsion process, assembling in solemn conclave to award medals for pictures, to judge which needs years of careful and special study and wide artistic experience. The student, curious on these matters, has only to note how different are the awards when artists give the prizes. Many of our best workers, we know, will not exhibit, so long as the craftsman's ideal is set up as the standard, and the judges are not artists. In the early days of photography, when Sir Charles Eastlake, formerly president of the Royal Academy, was also president of the Royal Photographic Society, and when Sir W. J. Newton, the eminent miniature painter was one of the vice-presidents, there seemed some chance for photography, and all might have gone well, had not these artists, as we are informed, been harried and worried by the ignorant wranglings of their brother "photographic artist" (?) judges. Those who were thus responsible for the resignation of those artists, deserve to be pilloried to the end of time in photographic literature, and such, we are sure, is the feeling of all who earnestly wish for the good and advancement of photography.

Gambling for medals.

Queer judges.

Early days of the Photographic Society.

This is a painful subject, but we conceive it to be our solemn duty to warn the student who is anxious to follow photography as an art, against all these traps. Let him set out with the determination to work for the approval of artists, and let him despise the approval or disapproval of all ignorant of art. As John Constable said long ago, "the self-taught artist has a very ignorant master!"

J. Constable.

We hope the reforms regarding exhibitions which we have for years advocated, and more fully set forth in the *Amateur Photographer*, in an article entitled "An Ideal

Reforms in exhibitions.

Exhibition," may some day be adopted, but we cannot be very sanguine. However, until some such reforms are adopted, photography must struggle on in darkness, and the blind will continue to lead the blind; and all we can do is to caution others, and ourselves avoid the guidance of the blind, unless we too wish to be led into the ditch.

CHAPTER XVI.

CONCLUSION.

We have then finished Book II., and we presume that the student has now mastered his technique, but the end is not yet. The student may thoroughly understand the scientific side of photography, he may have mastered completely the use of his tools and he may be able to produce impressions on his plates such as he desires, but the end is not yet, for now he has to learn the practice and principles of art, he has to prove whether he can be an artist, for such is only given to a few. All can learn to draw, to paint, to photograph, to etch, but they may remain draughtsmen, painters, photographers, etchers all their lives, and never become artists. The history of art shows indeed how few become artists at all, and as for those who become great artists, they are as scarce as great poets. The student then must study art in some form or other, as well as his own technique, which he could learn alone if he followed our instructions; art, however, cannot so be learned, and the student should, if possible, attend some art classes. There are numerous art schools throughout the kingdom, and our student cannot do better than enter one of them and go through a course of drawing. Though no very profound knowledge is to be obtained at such schools, what is taught is better than none at all, and after all the student cannot expect to get the best advice on the matter, that is given to but the very few and fortunate. Advice.

In the next book we shall give what advice we can, but at the same time our student must study practically

some branch of art; unless, indeed, he wishes to become one of the mighty band of art-ignorant craftsmen, or unless he is so fortunate as to be cast amongst highly talented artists, to whom he can easily apply for advice. For having learned his technique he has but learned how to speak, he can only show his calibre by what he has to say and how he says it, just as all the world can write yet only the highly trained can write artistically.

In a very few months the student will see, if he is fitted by nature to become an artist, and if he is not our advice is give it up, or else only play at it as most of the world do; but in our opinion it is not worth playing at, there are so many more satisfying things when play is the aim.

BOOK III.

PICTORIAL ART.

"He does not sufficiently understand that things are of value only according to their fundamental qualities, and he still believes that the care with which a thing is done, even if it is aimless, ought to be taken into account. In fact it would be a good thing to make him understand that things exist only to the extent of the stuff they contain."

J. François-Millet.

CHAPTER I.

EDUCATED SIGHT.

We are all born mentally blind, but almost immediately we detect light, as can some of the lowest animals, then we *learn* to distinguish the colours and forms of objects as we grow older, and there the majority of us stop, and yet we all think we can see equally well. That we cannot is a truism, for after being able to distinguish colours and forms, but very few persons go on to educate their sight more perfectly. Some of us may learn to distinguish certain kinds of material, the different aspects of these materials under different conditions, and so they learn trades and are excellent judges of tea, coffee, hosiery and paper. Still higher come the scientific men who pay more attention to the education of the sight. They learn to distinguish the microscopic beings, the life-histories of the lower forms of animal life, the histology of flowers, the structure of the trees, the aspects of the skies, the physical and chemical phenomena of the elements, the movements of the planets, so that in all their walks nature is full of interest to them; they find wisdom in a pond, they revel in a marsh, or they travel to a far country for the sake of rare birds' eggs, or spend days and nights in their laboratories to solve new chemical problems, or organize expeditions to study unusual phenomena of the heavenly bodies; they see and love all these things. The man uneducated in science finds no interest in a drop of muddy water, he finds nothing wonderful in the vegetation of the country side, he passes unheeded the rarest birds, and the rain-

Born blind.

Trades.

Science.

bow, and storm-cloud, and the blazing comet, all alike to him have no interest, he is blind to them; or if he sees them at all, it is as through a glass, darkly.

Art.

All this the world allows, and allows that no one save those who by hard work have trained themselves can see these things. But mark the stupidity of mankind, he allows he is blind to the pleasures of science and will remain so, unless he studies the subject, but when it comes to art matters, like a weathercock, he shifts round and thinks he can understand all that without any training at all, yet he is born as blind and incapable of understanding art as he is of understanding science until he has trained himself to understand.

The artist.

The artist, like the scientific man, begins by studying closely his subject—nature as a whole—he studies her in all her aspects, he seeks for harmonies and arrangements in colour and form, for beautiful lines of composition, and only after long and close observation do the scales drop from his eyes and he sees a beautiful pose, even in a child digging up potatoes, or a man throwing a hammer or running a race, or he sees subtle beauties of colour in a reed-bed, or poetry and pathos in an old peasant stooping under a load of sticks, and this is far more difficult to see than it is to learn to see the scientific truths, and that is why there are so few real artists and poets and so many more scientific men. Art alas, cannot be learned like science, hard work will not necessarily make an artist. Nearly all photographers are art-blind, but they are like the colour-blind old lady who did not know it, and of course the only hope for them is to be convinced of their blindness, then perhaps they may do something towards getting rid of the defect.

Photographers art-blind.

Necessary to cultivate artistic faculty.

The student should now clearly understand why it is so necessary that this faculty of artistic sight should be cultivated and trained, for since it is our fundamental principle that all suggestions for pictures should come from nature, we must first see the picture in nature and be struck by its beauty so that we cannot rest until we had secured it on our plate; we must therefore learn to see it in nature. If we see a beautiful pose, or a beautiful effect

in nature, we should at least make a note of it if we cannot secure it. A slight sketch made at the time will do. Therefore, amateur reader, if you have not trained yourself by study to see these things in nature, blame no one but yourself, but remember you are blind, blind, blind; but there is a remedy, and no surgical operation is required either.

Necessity of study.

Study! You must ever be on the look-out for beauties, that is the necessary mental attitude, otherwise they will never be seen. You must look for a thing if you wish to find it, and it is only by showing us your finds that you will prove you have artistic sight, we shall not believe a word you say about art until we see it in your work. If you do not study, or if you are incapable, you will remain blind in spite of your looking, and there will be weeping and gnashing of teeth when you show to the world commonplaces which you think are gems, for the world will soon tell you they are commonplace. We once knew a person who was colour-blind, who resented the suggestion as a personal insult, until one evening her eyesight was tested, when her colour-blindness was proved.

Let the student then be assured that he is blind, he cannot *see* art and nature until he has studied them long and closely. He may be arrogant enough to think he knows all about her without study. If that is so, as he grows older let him refer back to his earlier works, and if he has progressed meanwhile, let him recall how perfect he thought those early works at the time he did them, and then let him lash himself for his folly. A really good work will always bear looking back at, and will hold its own however old the artist gets. There is no royal road to this appreciation of the beauties of art and nature, none but incessant and loving study, and though the cockney, or sage of the university, who dwells in towns and learns his art and his nature in the National Gallery and British Museum, may lecture on nature and art, let the student avoid him and his example. Lectures on art at any time are but Dead Sea fruit.

No royal road.

The student then must educate his eyesight in order to see the beauties of nature and art, and to do this he must study hard, for the true artist wishes to see these beauties and to record them, that is all, nothing more. The seers who see deeply, they are the poets! In science the original discoverers are the seers, and since but few can aspire to become seers, nevertheless let the rest be content to go on studying, for all of us can see these things with an educated and intelligent eye, and seeing, understand, and that reward is worth the pains.

CHAPTER II.

COMPOSITION.

No chapter of this book has given us so much thought as this chapter on composition.

Composition.

We could easily, as most writers have done, have given a digest of Mr. Burnet's laws of composition, but we have no faith in any "laws of composition." A law, to be logical, must hold good in all cases; now the so-called "laws of composition," are often broken deliberately by great artists, and yet the result is perfect. This is easily explained, for these so-called laws are mere arbitrary rules, deduced by one man from the works of many artists and writers; and they are no more laws in the true sense than are the laws of Phrenology or Astrology.

Laws of composition.

The great question then, which presented itself to us, was this: Will the study of these so-called rules do good or harm to the student? Will a knowledge of them lead him to the production of conventional work, or will it in any way help him in his future work? We had many earnest discussions on this point with artists, and they seemed equally uncertain in the matter, though one condemned all such laws as absurd and unnecessary. We most certainly feel inclined to agree with that one dissentient, but in trying to place ourselves in the position of the photographic student, with absolutely no knowledge of art, we have come to the conclusion that, perhaps, the student had better study Mr. Burnet's "Treatise on Painting." A cheap edition of this book is published by Dr. E. Wilson, of 835, Broadway, New York, and every student should get a copy of it. It can be thoroughly mastered in a week or two, so not much time will be lost.

Our problem.

"Treatise on Painting."

The numerous plates will at any rate be of some use to the student.

Our ideas on composition.

Now, from these remarks, it must not be assumed that we are no believer in "composition." Composition is really selection, and is one of the most—if not the most—vital matters in all art, certainly the most vital in the art of photography. But the writer maintains there are no laws for selection. Each picture requires a special composition, and every artist treats each picture originally; his method of treatment, however, often becomes a "law" for lesser lights.

It has been assumed by opponents to "Naturalism" that naturalistic artists ignore composition, and portray nature "anyhow," just as she happens to present herself to them. Nothing could be further from the truth. None is more careful in selection and arrangement than the naturalistic painter, at the same time none is less conventional. Nature is not always suitable for pictorial purposes, though she is often enough suitable, and it is when she is propitious that the artist depicts her; hence the great principle of naturalism, that all suggestions should come from nature. The object of art training is to show these propitious moods, and to enable the painter to portray them. We prefer, then, the word "selection" to composition. The matter really stands thus, a good naturalistic artist selects a composition in nature which he sees to be very fine.

By composition, as used in this paragraph, is meant the harmonious and fitting combination of the various component parts of the picture which shall best express the picture.

Our best method will be to follow Mr. Burnet's division of his subject, and offer a running commentary on the essentials of his work from a photographer's standpoint, giving our ideas on the subject when they differ from those of the author of "A Treatise on Painting."

Burnet's "Painting."

"A Treatise on Painting," by J. Burnet, F.R.S.

Education of the Eye.—Measurement and Form.

Omitting to comment on Mr. Burnet's remarks, we put

the matter thus, that it is highly desirable for all photographers to learn drawing, and to learn it intelligently. Nothing could be more lamentable than the way in which drawing is taught in our schools, it is worse than useless. The student should go to some good art school for a few months, and learn drawing, for in that way are learned the analysis and construction of objects, and, above all, the eye is trained to careful observation, which will be invaluable in the study of tone and selection.

Perspective.

Perspective.

This section the student should read over carefully, understanding thoroughly the "point of sight" and the causes of violent perspective. For in photography, though his lens may be true in drawing, he can as easily obtain violent perspective as the draughtsman, by placing the lens too close to his model. Fore-shortening, too, should be thoroughly understood. Aërial perspective has been simply treated by us in this work, and the various remarks of Burnet on this subject must be taken *cum grano salis.*

Chiaro-oscuro.

Chiaro-oscuro.

This term means light and shade. Now the term "chiaro-oscuro" is very misleading, for it is used by different artists to mean different things. The whole of photography depends on the proper management of light and shade, for our drawing is done for us; but we prefer to use the more modern term, "tone," to express what we mean by light and shade; that term we have already fully explained. Chiaro-oscuro, as we understand it, is the *arbitrary* placing of masses of light against masses of shade to produce certain desired effects; it is, therefore, conventional, and akin to the *law* which required all trees to be painted fiddle-brown. It is needless to say the only way such a conventional chiaro-oscuro can be obtained in photography is by arranging the objects in nature, or by retouching, and both are against our principles. The student, then, must, as we have said, master "tone," that is his chiaro-oscuro, his light and

Breadth.

shade, and he must always remember to look for "breadth" in his treatment. Breadth is found in all good work, and it depends in photography not entirely upon light and shade, but upon the focussing and developing as well, as we have already indicated. Why are spotty-lighted, sharply-focussed, brightly-developed negatives so "noisy" and garish and inartistic? It is that they lack "breadth." It must not be thought from this that no sunny pictures have breadth; on the contrary, if the masses are large, and the planes well rendered, and the tonality true, there can be as much breadth as in a grey-day effect. It has been said that "breadth" is a device of the painters, but this is mere nonsense; let the student look well at a simple stretch of grass-land bordering a still lake, on a damp, misty evening, and then he will see breadth. Let him focus that scene as sharply as he likes, including a portion of sky as well, and develop and print from it, and he will find breadth, and he will probably have a clear understanding as to the meaning of the word.

Mr. Burnet divides chiaro-oscuro into five parts, viz. light, half-light, middle tint, half-dark, dark. This arbitrary division is hypercritical. For working purposes, light, half-tone or middle tint, and dark, are quite sufficient; other subdivisions are far too subtle and numerous to be considered theoretically, and, practically, truth of tone is only to be learned by long experience and study, and we believe all the directions given by Mr. Burnet for producing relief, harmony, and breadth, to be artificial and useless. An examination of the plates shows clearly how futile are his deductions, and how untrue in light and shade, viz. tone, they all are.

Composition.

Composition.

Mr. Burnet opens with the statement that "geometric forms in composition are found to give order and regularity to an assemblage of figures." This is the first principle on which is built his structure of geometrical composition. We will omit the dicta of literary men on

pictorial art which Mr. Burnet is so fond of quoting, but which we consider too worthless to do more with than mention. Let us then apply ourselves to the study of his thesis.

His first remarks are upon angular composition, and as he finds that these lead him into conventional methods, he goes on to say that this conventionality can be rectified by balance. Even if we would follow this form of composition our means are limited, for, unlike the painter, we cannot alter and re-arrange. However, we have no wish to make "angular compositions," and consider them false in theory. Painters, on the other hand, must settle these matters for themselves; we know how many settle them, that is by ignoring all such teachings as nonsense. Next we come to the "circular composition," which, we are told, is "applicable to the highest walks of art," wherever they may be. Soon after this we come upon the truest remark in the book. "Artists generally prefer the opinions of untutored children to the remarks of the most learned philosophers," and we fear most modern artists prefer the teachings of nature to those of that philosopher John Burnet, F.R.S. Finally, Mr. Burnet winds up with the words, "I must also caution the young artist against supposing that these modes of arrangements are given for his imitation. I merely wish him to be acquainted with the advantages any particular composition possesses, that in adopting any invention of his own, he may engraft upon it these or similar advantages."

Now this reads very oddly after talking of *rules* of composition, for what is the good of a rule if it is not to be followed? and it reads very illogically when compared with the quotation from Reynolds (Brougham ?), which goes to back up the excuse for advocating rules as Burnet gives them,—viz. "to those who imagine that such *rules* tend to fetter genius, &c."

In short, the whole work is illogical, unscientific, and inartistic, and has not a leg to stand on. It is very specious to say that all compositions are made according to geometrical forms, for nothing can be easier than to take arbi trary points in a picture and draw geometrical figures

joining them. The pyramid is a favourite geometrical form of composition. Now take any picture, and take any three points you like, and join them, and you have a pyramid, so does every composition contain a pyramid, as does a donkey's ear. But enough of this. The student is distinctly warned against paying any serious attention to these rules; it is, however, as we have said, well that he should know of them, and we suspect he will learn something of design from merely looking carefully at the plates. Of tone he will learn nothing.

With Mr. Burnet's remarks upon colour we are in no way concerned.

But the student will say, how, then, can composition be learned? Our answer to this is that composition, that is selection, cannot be learned save by experience and study—there is no royal road to it, no shilling guide. This subtle and vital power must be acquired if we are to do any good work, for we are dumb until we do acquire it. We can no more express ourselves in art without having mastered composition, than a child can express himself in prose until he has learnt the art of writing.

CHAPTER III.

OUT-DOOR AND IN-DOOR WORK.

It is presumed the student has thoroughly mastered and applied all that has preceded this chapter, especially the matter of tone, otherwise it is no use attempting to make pictures, which means attempting composition.

Presuming then the student is master of the subject as already treated, we will now proceed to offer some suggestions on picture-making, but be it distinctly understood they are only suggestions.

We shall divide the subject into two sections, beginning with out-door work.

PORTRAITURE.

Out-door portraiture.

Very fine portraits and groups can be taken out of doors. In taking such pictures, it is admissible to dictate the dress of the model, and to arrange tea-parties, sporting, athletic, and other groups. But if the student intends to make them artistic, he must be very particular with his *types*, and see above all things that the sentiment is true. For example, it is a fine parody on nature to photograph a gaunt and self-conscious girl in æsthetic clothing, for dress it cannot be called, with a tennis-bat in her hand. For a tennis picture, fine girls, physically well-formed, should be chosen.

Background.

Next the student should choose a simple background, which with the dress and flesh tints form a harmony or fine study in tone. The model's dress should be very simple and well-fitting, such dresses as were worn by Botticelli's women (dresses quite unlike the modern æsthetic gowns), being very artistic for women, while flannel shirts or simple

white trousers will look well on the men. All monstrosities and exaggerations of fashion should be avoided, such as flowers, chatelaines, wasp-waists, high heels, and dress improvers. The best material for dresses for pictures is a coarse, limp, self-coloured muslin (butter-cloth is excellent for the purpose). All jewellery should be eschewed, the only decoration of this kind that photographs simply and well is perhaps a string of pearls, which looks charming.

Materials for dresses.

Jewellery.

The work must be true in sentiment, and the student must choose an appropriate treatment of the subject. The portrait being out of doors, we must be made *to feel* that fact; thus, a girl resting from tennis, a girl in a riding-habit, or better still on horseback, would be very appropriate. The background must be carefully selected to be in keeping with the figure, and to help to tell the story fully and emphatically, and yet it must be kept subdued.

Groups.

Groups are very difficult to treat artistically, and our never-failing rule is to limit as much as possible the number of people in the group. Having now chosen his model and arranged other matters, the student must remember to let his model stand or sit, as he or she likes, and all suggestions for the pose should come from the model; this is a fundamental principle of naturalism. A great friend of ours, a well-known sculptor, assures us he would not dare to pose a model according to any preconceived idea, but he watches the model pose in different ways, and when he sees a striking and beautiful attitude he seizes on that and makes a rapid sketch of it. That is the only true way for the photographer to work, he must have the camera ready, focussed and arranged, and when he sees his model in an *unconscious* and beautiful pose, he must snap his shutter. It is thus very evident how important is art-knowledge and insight for all good photographic work, and it is thus evident how a man who is sympathetic and of a refined temperament will show his individuality in his work.

Treatment of model.

Commercial groups.

With commercial groups of bands, football teams, &c., the student has nothing to do, and let him never be

induced to photograph anything which he does not think will make a picture. He must have patience also, when waiting for nature's suggestions; we have waited a whole morning, rubber ball in hand, for a suitable grouping of colts, but we finally got one of the best things we ever produced. If our photographer be a smoker, let him light his pipe and take it easy, talking meanwhile to the model; at length his chance will come, but it may only come once, and then he must not hesitate or the picture may be lost in a moment. It is preferable that all out-door portraits should be taken on a grey day, or in the shade if the sun be shining.

There is a wide field open to wealthy photographers for producing really good pictures of their friends at country houses. But the student must remember that to produce a perfect picture takes a long time and can only be achieved by long and patient practice, coupled with artistic ability. The hurried representations of shooting, boating, and family groups, which are so often produced by "professionals" and "amateurs" alike, are beneath contempt. They are mere statements of facts, and as much akin to art as the directions in a cookery-book are akin to literature. Photography up to a certain point, and in a haphazard way, is so easily learned now-a-days that there is absolutely no merit in producing such work. Such photographs are only the confessions of untrained and commonplace minds.

LANDSCAPE.

Land-scape.

The student who would become a landscape photographer must go to the country and live there for long periods; for in no other way can he get any insight into the mystery of nature. All nature near towns is tinged with artificiality, it may not be very patent but the close observer detects it. Among fisher-folk this may be seen in the sealskin cap, in the rustic it shows itself in the hard billycock hat, in landscape pure it may be seen in some artificial forms of the river-banks, or in artificial undergrowths; the mark of the beast, the stamp of vulgarity,

that hydra-headed monster which always crops up wherever a few men are gathered together, is sure to be found somewhere. For this reason then the would-be landscape-photographer should pack up his things and go to some locality with which he is in sympathy, just as a painter does. Here let him be cautioned against taking part in any of those "outings," organized by well-meaning but mistaken people. It is laughable indeed to read of the doings of these gatherings; of their appointment of a leader (often blind); of the driving in breaks, always a strong feature of these meetings; of the eatings, an even stronger feature; and finally of the bag, 32 "Ilford's," 42 "Wrattens'," 52 "Paget's," &c.

"Outings."

Apply the same sort of thing to painting, and would it not indeed be ridiculous? Would it not lower painting in the eyes of the world if say thirty academicians with a leader for the day, assembled at Victoria Station with pastels and boards, or with paint-tubes and small canvasses, and went by train to some village and there proceeded to pastel or paint what the leader suggested; then would follow the dinner (the best part, no doubt), and next day how edified would be the world to read in the daily papers of the most successful outing, the result of which was the covering of 32 "Rowney," 29 "Windsor and Newton," and 40 "Newman" canvasses! All these "playings" bring photography down to the level of cycling and canoeing, and yet many photographers wonder that artists will have nothing to do officially with photography. We know well that it is for these and similar reasons that serious artists will not allow their names to be officially connected with photography, and we here earnestly appeal to all who really have the advancement of photography at heart to do all in their power to bring such trivial "play" to an end. Having then decided to go to the country, let the student think well with which kind of landscape he is most in sympathy, but let him always remember this fact that all landscape is not suitable for pictorial purposes, and he must learn to distinguish between the suitable and the unsuitable. Landscapes there are full of charm, pleasant places for

Choice of district.

a picnic or encampment, but when you come to put them into a picture, they become tame and commonplace.

Again let the student avoid imitation. If he knows that an artist has been successful in one place, do not let him, like a feeble imitator, be led thither also, for the chances are, if his predecessor was a strong man, that he will produce commonplaces where the other produced masterpieces, and thereby confess his inferiority. It is far better to be original in a smaller way than another, than to be even a first-rate imitator of another, however great.

Photographic haunts.

For this reason the present method adopted by inartistic writers of publishing "Photographic Haunts" is strongly to be deprecated, such guides can but lead to conventional and imitative, therefore contemptible work. The fact of the matter is nature is full of pictures, and they are to be found in what appears to the uninitiated the most unlikely places. Let the honest student then choose some district with which he is in sympathy, and let him go there quietly and spend a few months, or even weeks if he cannot spare months, and let him day and night study the effects of nature, and try at any rate to produce *one picture* of his own, one picture which shall show an honest attempt to probe the mysteries of nature and art, one picture which shall show the author has something to say, and knows how to say it, as perhaps no other living person could say it; that is something to have accomplished. Remember that your photograph is as true an index of your mind, as if you had written out a confession of faith on paper.

We will now offer a few remarks on the component parts of a picture.

THE "LINES."

"Lines."

As we have said there can be no rules for the arrangement of lines, yet they are all-important and essential for the expression of harmony and directness. The student must cultivate the habit of quickly analyzing the lines of a picture, and coming to a decision whether they are harmonious and pictorially suitable. For example, he

must not have the lines of different objects cutting each other and forming unpleasant angles, for if he does this the eye of the observer will never get away from the geometrical figure, however good the other part of the picture may be. He should look for repeated lines, and his lines should run into the picture, thus all uncomfortableness is avoided. There is no necessity for balance or the equal arrangement of masses on either side of the picture, for this, though it may produce pretty pictures, will never produce strong ones. Every line must help to tell the story and strengthen the picture, otherwise it weakens it.

Balance.

AËRIAL PERSPECTIVE.

Aërial perspective.

It is of vital importance that this be well rendered, the method for obtaining it having already been shown. The student must remember that he must give the true value to the separate planes of the picture, or it is worthless for reasons already stated. The state of the weather, has, as we have indicated, a wonderful modifying effect on this perspective, and must be carefully studied.

TONE.

Tone.

Of vital importance is the relatively true rendering of tone as already indicated. This is such a subtle subject that no directions can be given for it, and the student can only master the subject by a long and ardent study of nature. He can test his knowledge by his power of criticizing pictures away from nature, for their truth or falsity of tone. The key in which the picture is pitched should always be in keeping with the subject rendered.

COMPOSITION.

Composition.

The objects must be arranged so that the thing expressed is told clearly and directly, in short, the student should try to express his subject as it has never been expressed before. All things not connected with the subject should be removed, and all but the chief thing to be expressed should be carefully subdued. The interest must not be divided, but all must go to help the

expression of the *motif* of the picture. Thus a white patch the size of a threepenny piece may ruin a twelve by ten inch plate, as many a hat, a basket, or other small article has done; just as a false foot may ruin an otherwise fine stanza. Be most careful how you introduce a detail, it may either make or mar your picture.

The sentiment and detail must always be appropriate or the result is a travesty. Thus haymakers do not wear new-fashioned buttoned-boots, nor do rustics wear sun-bonnets and aprons all clean and fashionably cut. But this is only a superficial matter, the artist must carry appropriateness much deeper than in mere costume; for example, a flock of sheep on a pasture may be made quite false in sentiment, if they are driven in a way that suggests a march to the slaughter-house, and they very easily huddle together in a manner that suggests that final procession. The student will now see how subtle all these matters are, and how little yet how much divides the masterpiece from mediocrity. Some photographers think naturalism consists only in taking things as they are, and they will exclaim, if you criticize their work, "Oh! it was just like that any way." True, oh ingenuous one, but it was just some other way as well, and perhaps that other way might have given a work of art, whereas this way has given a bald and uninteresting fact. Selection or composition is a most subtle matter, and one very difficult to learn, but let the student persevere, and if he has the ability he will find that the scales will fall from his eyes as he goes on.

IMPRESSION.

Impression.

The impression must be true throughout, and if all the preceding components are true the impression will be true.

Our student may now have carried out all these things and yet there may be no picture, his mind may be commonplace. He may have wasted a good technique on a commonplace subject, such as a yacht going in full sail, an express train, some very ordinary dogs or horses, or some very extraordinary men or women. We are then brought to a very important matter, the subject.

SUBJECT OF THE PICTURE.

Subject.

The subject must have pictorial qualities, it must be typical, and must give æsthetic pleasure. The student must look for elegance and a *distingué* air in his subject. You will find that the best pictures will be of those subjects which hit you hardest in nature, those which strike you so much that you feel an irresistible desire to secure them.

Art of feeling nature.

You must then train your feelings, for, as John Constable said, "the art of feeling nature is a thing almost as much to be cultivated as the art of reading the Egyptian hieroglyphics." You must then, when you have felt your subject, be resolute and only take in what is necessary to express your subject; this is the text of the artist. Everything must be harmonious and comfortable, but that alone will not suffice any more than will the subject alone. Everything must be in keeping in the picture. The artist must be in sympathy with his subject, "*entrer dans la même peau*," as the French say. He must have no preconceived notion of how he is going to do a subject, but take all his suggestions from nature and humbly follow them and lovingly portray them. Pure imitation of nature (even if it were possible) won't do, the artist must add his intellect, hence his work is an interpretation. To photograph a "flying express" so that it looks as if standing still is imitation, to render it with the suggestion of motion by its smoke and steam is an interpretation. The great question which the student should ask himself is: My aim, what is it? If that be serious and honest, and not feeble and vainglorious, he is all right. Remember that the aim of art is to give æsthetic pleasure, and that artists are the best judges of this matter, and you will find that so good is their training that they elevate the meanest things they touch.

Poetry in works of art.

The highest expression is that of poetry, and therefore the best works of art all contain poetry. What is poetry and how it is to be got is not to be discussed in our present state of knowledge, suffice it to say that the poet is born and not made, though the poet's speech may be improved by training.

Thus it will be seen how difficult a matter it is to produce a *picture*, even when we have thoroughly mastered our technique, for, to recapitulate, in a picture the arrangement of lines must be appropriate, the aërial perspective must be truly and subtly yet broadly rendered, the tonality must be relatively true, the composition must be perfect, the impression true, the subject distinguished, and if the picture is to be a masterpiece, the *motif* must be poetically rendered, for there is a poetry of photography as there is of painting and literature. Qualities of a picture.

Never rest satisfied then until these requirements are all fulfilled, and destroy all works in which they are not to be found.

That it will be possible for a few only to succeed is evident, but the prize is worth striving for, for even if we do not all attain to the production of perfect works, we shall have gained a knowledge of art and an insight into nature, that will be a never-failing source of pleasure to us in our daily walks.

FIGURE AND LANDSCAPE.

By far the most difficult branch of photography is that in which figures occur in landscapes. All previous remarks apply to this branch of the art, only here it is more necessary than ever that every detail be perfect. This is a branch which we have perhaps studied and developed more than any other, and yet even now we feel but a beginner in it. One thing you must never forget, that is the *type;* you must choose your models most carefully, and they must without fail be picturesque and typical. The student should feel that there never was such a fisherman, or such a ploughman, or such a poacher, or such an old man, or such a beautiful girl, as he is picturing. It is a great mistake for photographers to attempt rural subjects unless they have lived in the country for a long time and are thoroughly imbued with the sentiment of country life. The truth of this axiom is proved by the falseness of sentiment seen in most country pictures done even by painters. The student who lives in town will find good figure-subjects in Figure and landscape.

the town, and if he has no sympathy with such life, he should try such subjects as shooting parties, coursing meets, riding subjects, and beautiful women. It is fallacious to try and cultivate an unsympathetic field and is sure to end in mediocrity or failure.

STUDIO PORTRAITURE.

Studio Portraiture.

The easiest branch of photography is portraiture in the studio, for all conditions, including even the dress of the model, are in the photographer's hands. The lighting is also perfectly under control.

Principles of lighting.

The principles of lighting a face are briefly these: A top light gives the best and subtlest modelling, and gives more relief than any other lighting. But the aim of pictorial art is not to give relief to illusion, therefore the top light effect is modified by a side light and by reflectors. The principle of using a reflector is this: Light falling at right angles on a plane surface gives the highest light, then as we turn the reflector through a circle, we get all gradations up to full dark, when the reflector is turned right round. This principle must be remembered in lighting the planes of the face. The portraitist must work as does the sculptor, in planes and tone, that is, he must quickly make an analysis of the face and observe the most suitable treatment of the subject, and then he must focus and develop so as to bring the planes well out, and they must be broad in treatment and true in tone.

These are the only principles which can be given for lighting, their application can be learned by study first on a plaster cast, and afterwards on the living model.

Character or expression.

The great thing to obtain is the character or expression of the model, everything must be sacrificed for this in portraiture, and enough of the figure must be taken in to thoroughly express the character. Thus the head alone may do in some cases, in others it will be necessary to include the hands, in others the whole body. It is needless to repeat that all portraits should be taken by quick exposures. The best way is for the student to have a very long

elastic tube to his shutter, then he can walk about and talk to the model, and when he sees a good natural pose, he can expose, and his picture will probably be good. The present way of posing, using head-rests, &c., is feeble and archaic, and certain to result in failure.

Another important hint is to place the lens on the same level as the eye of the model, neither higher nor lower, if large heads are taken. When the picture is to be full length or three-quarter length, the head should still receive the principal attention, and all else be subdued.

We have already treated of arrangements of backgrounds and dresses in harmonies, and of the absolute necessity for using only suitable accessories. In addition all other principles of composition, harmony, breadth, as already described, must be remembered.

Finally we give a quotation from Mr. Adam Salomon, sculptor and photographer :— Adam Salomon.

"Each subject should be treated according to its own requirements, its own individualism. . . . When the artist is interested in his work and believes in his art, it becomes wonderfully plastic, and the materials wonderfully tractable in his hands."

CHAPTER IV.

HINTS ON ART.

Practical hints.

As practical hints for working cannot be woven into a continuous text, we will give them separately.

Prizes for "set subjects."

Never compete for prizes for "set subjects," for work of this kind leads to working from preconceived ideas, and therefore to conventionality, false sentiment, and vulgarity.

Man originally vulgar.

Remember that the original state of the minds of uneducated men is vulgar, you now know why vulgar and commonplace works please the majority. Therefore, educate your mind, and fight the hydra-headed monster —vulgarity. Seize on any aspect of nature that pleases you and try and interpret it, and ignore—as nature ignores—all childish rules, such as the lens should work only when the sun shines or when no wind blows.

Æolus.

Æolus is the breath of the life of landscape.

Merit of photographs.

The chief merit of most photographs is their diagrammatic accuracy, as it is their chief vice.

Pseudo-scientific photographers and art.

Avoid the counsels of pseudo-scientific photographers in art matters, as they have avoided the study of art.

Resolution.

If you decide on taking a picture, let nothing stop you, even should you have to stand by your tripod for a day.

Point of sight.

Do not climb a mast, or sit on the weathercock of a steeple, to photograph a landscape; remember no one will follow you up there to get your point of sight.

Rembrandt pictures.

Do not talk of Rembrandt pictures, there was but one Rembrandt. Light your pictures as best you can and call the pictures your own.

"Artist photographers."

Do not call yourself an "artist-photographer" and

make "artist-painters" and "artist-sculptors" laugh; call yourself a photographer and wait for artists to call you brother.

Remember why nearly all portrait photographs are so unlike the people they represent—because the portrait lens as often used gives false drawing of the planes and false tonality, and then comes along the retoucher to put on the first part of the uniform, and he is followed by the vignetter and burnisher who complete the disguise. Falsity of photographic portraits.

The amount of a landscape to be included in a picture is far more difficult to determine than the amount of oxidizer or alkali to be used in the developer. Amount of landscape to be included in a picture.

Pay no heed to the average photographer's remarks upon "flat" and "weak" negatives. Probably he is flat, weak, stale and unprofitable; your negative may be first-rate, and probably is if he does not approve of it. "Flat" and "weak" negatives.

Do not allow bad wood-cutters and second-rate process-mongers to produce libels of your work. Bad wood-cutters.

Be broad and simple. Broad and simple.

Work hard and have faith in nature's teachings. Work and faith.

Remember there is one moment in the year when each particular landscape looks at its best, try and secure it at that moment. The propitious moment.

Do not put off doing a coveted picture until another year, for next year the scene will look very different. You will never be able twice to get exactly the same thing. Procrastination.

Vulgarity astonishes, produces a sensation; refinement attracts by delicacy and charm and must be sought out. Vulgarity obtrudes itself, refinement is unobtrusive and requires the introduction of education. Vulgarity.

Art is not legerdemain, much "instantaneous" work is but jugglery. Art and legerdemain.

Though many painters and sculptors talk glibly of "going in for photography," you will find that very few of them can ever make a picture by photography; they lack the science, technical knowledge, and above all, the practice. Most people think they can play tennis, shoot, write novels, and photograph as well as any other person—until they try. "Going in for photography."

Faith. Be true to yourself and individuality will show itself in your work.

Sensational in nature. Do not be caught by the sensational in nature, as a coarse red-faced sunset, a garrulous waterfall, or a fifteen thousand foot mountain.

Prettiness. Avoid prettiness—the word looks much like pettiness, and there is but little difference between them.

On studying photography. No one should take up photography who is not content to work hard and study so that he can take pictures for his own eye only. The artist works to record the beauties of nature, the bagman works to please the public, or for filthy lucre, or for metal medals.

On "form." At the University of Cambridge, in our student days, it was considered "bad form" to give a testimonial to a tradesman for publication. This is still "bad form;" let the student, therefore, never let his name appear in the advertisement columns of photographic papers beneath a puff of some maker's plates or some printing papers. "Good wine needs no bush."

Value of a picture. The value of a picture is not proportionate to the trouble and expense it costs to obtain it, but to the poetry that it contains.

"Good art." Good art only appeals to the highly cultivated at the first glance, but it gradually grows on the uncultivated, or the half cultivated; with bad art the case is exactly the opposite.

Life of the model. Give the *life* of the model in a portrait, not his bearing towards you during a *mauvais quart d'heure.*

Reflections and shadows. Do not call reflections—shadows; learn to distinguish between the two.

Beautiful poses. Always be on the look-out for a graceful movement when you are conversing with a person, thus you will learn.

Limits of art. Keep rigidly within the limits of your art, do not strive for the impossible, and so miss the possible.

On reproduction. Never judge of the merits of a painting or piece of sculpture from reproductions.

Quality. Every good work has "quality."

Sentiment and poetry. Do not mistake sentimentality for sentiment, and sentiment for poetry.

Spontaneity is the life of a picture. Spontaneity.

Continual failure is a road to success—if you have the strength to go on. Failure.

The colour of a landscape viewed in the direction of the sun is almost unseen; therefore turn your back on the sun if you wish to see nature's colouring, and you do! Colour of landscape.

Do not emulate the producers of photographic Christmas cards and "artistic"(?) opals; they are all worthy of the bagman. Christmas cards and "artistic" opals.

Do not mistake sharpness for truth, and burnish for finish. Finish.

The charm of nature lies in her mystery and poetry, but no doubt she is never mysterious to a donkey. Mystery.

It is not the apparatus that does the work, but the man who wields it. Apparatus.

Say as much as you can, with as little material as you can.

Flatter no man, but spare not generous praise to really good work. Good work.

Lash the insincere and petty *homunculi* who are working for vanity. Vanity.

Hold up to scorn every coxcomb who paints "artist-photographer" or "artist" on his door, or stamps it on his mounts. Artist and artist-photographer.

Remember every photograph you publish goes out for better for worse, to raise you up or pull you down; do not be in haste, therefore, to give yourself over to the enemy. On publishing.

By the envy, lying and slandering of the weak, the ignorant, and the vicious, shall you know you are succeeding, as well as by the sympathy and praise of the just, the generous, and the masters. On success.

When a critic has nothing to tell you save that your pictures are not sharp, be certain he is not very sharp and knows nothing at all about it. "Sharpness."

Don't be led away to photograph *bourgeois* furnished interiors, they are not worth the silver on the plate for the pleasure they will give when done. Interiors.

Greatness.

The greater the work the simpler it looks and the easier it seems to do or to imitate, but it is not so. Photographs as historical records.

Photographic pictures may have one merit which no

other pictures can ever have, they can be relied upon as historical records.

Art at home.

Art is not to be found by touring to Egypt, China, or Peru; if you cannot find it at your own door, you will never find it.

Nature and pictures.

People are educated to admire nature through pictures.

Science and art.

Science destroys or builds up, and seeks only for bald truth. Art seeks to give a truthful impression of some beautiful phenomenon or poetic fact, and destroys all that interferes with her purpose.

Topography.

Topography is the registration of bald facts about a place; it is sometimes confounded with Art.

Art and culture.

The artistic faculty develops only with culture. A man may be a Newton and at the same time never get beyond the chromographic stage in art.

Individuality.

Without individuality there can be no individual art, but remember that the value of the individuality depends on the man, for all the poetry is in nature, but different individuals see different amounts of it.

"Fiddle-brown" trees.

Had Constable listened to rules we might have had "fiddle-brown" trees in our pictures to-day.

Naturalistic works.

Nature is full of surprises and subtleties, which give quality to a work, thus a truthful impression of her is never to be found in any but naturalistic works.

On opinion in art.

The undeveloped artistic faculty delights in glossy and showy objects and in brightly coloured things. The appreciation of delicate tonality in monochrome or colour is the result of high development. The frugivorous ape loves bright colour, and so does the young person of "culture," and the negress of the West Indies, but Corot delighted only in true and harmonious colouring.

Nature and sanity.

Nature whispers all her great secrets to the sane in mind, just as she delights in giving her best physical prizes to the sane in body. Nature abhors busy insanity.

Busy insanity.

"Stolen bits."

Do not be surprised if you find "stolen bits" of your photographs in the works of inferior etchers, aquarellists, and black and white draughtsmen; it pays them to steal, while it does not hurt you, for they cannot steal your "quality."

Many photographers think they are photographing nature when they are only caricaturing her. Nature and photography

The sun when near the horizon gives stronger shadows than when near the zenith. Sun and shadows.

When writers tell you photography is one thing and art another, find out who they are, and you shall find their opinion on art-matters is contemptible, and it is only their omniscient impudence and fanaticism that allows them to contradict a sculptor like Adam Salomon, and a painter like T. F. Goodall, to say nothing of others. Photography and art.

The shallow public like "clearness," they like to see the veins in the grass-blade and the scales on the butterfly's wing, for does it not remind them of the powerful vision of their periscopic ancestors—the Saurians. Clearness.

When the vulgar herd jape at photography, stand firm and ask them if their long-eared ancestors did not jape at water-colour painting and at etching. Japers at photography.

Ask of critics only "fair play." Much of the criticism of to-day consists in the suppression of the truth of the author and the advocacy of the falsity of the critic Criticism is nearly a lost art. Critics.

CHAPTER V.

DECORATIVE ART.

Decorative art.

By the term "decorative," we mean the ornamentation of anything constructed for some useful or special purpose as opposed to the ornamentation whose object is to please *per se*. Thus, though both sculpture and easel pictures are decorative in one sense, they are executed with no consideration or regard for other purposes than to please. As we have before shown, the humblest of the decorative arts may be raised to the dignity of a fine art if an artist takes the work in hand and succeeds, or the work may degenerate into mere craftsman's work. For decorative purposes, the various methods are modified and adapted to the important considerations of the use and fitness of the object and place decorated. Thus no good artist would paint a finished and studied landscape on a dado, he would paint the scene flat, and colour it in appropriate harmony with surrounding objects, for that is the aim; and a workman not an artist would, of course, as in all arts, painfully elaborate and finish it so that it was neither a decorative work nor a painting in the ordinary sense. In all good decorative work the same old story of naturalism holds good; all the best decorative work we have seen was suggested by nature, and though, of course, it is beyond the scope of decorative art to "copy nature," as superficial folk say, yet all patterns and forms and harmonies should be suggested by nature. We have seen harmonies of sea-weed and sand which would have made a beautiful scheme for decorative work. The best decorative work has always

Naturalism in decorative art.

been adapted from nature, even the geometrical patterns being taken from crystals, microscopic pictures of vegetable cells, &c.

Photography as applied to decorative art.

However, we must leave a general discussion of this interesting subject, for we are here only concerned with its photographic side. We are not aware that this application of decorative art has ever received much attention; and when we mention transparencies and enamels, we have said all that has been done towards employing photography decoratively. By enamels, of course, is not understood those glossed and raised productions on paper, which by some extraordinary blunder have been erroneously called enamels.

Principles.

Now the photographer, who studies and hopes to excel at decorative photography, must remember that he must work on the same general principles as he does in producing pictures, that is, he must pay attention, in a broad way, to the tone of the room, to effects of contrast, to harmonies, to the effect of artificial lights and of complementary colours, and above all to truth and naturalism. Thus a delicate landscape must not be enamelled on a tea-cup, for it is obviously false in principle to place a picture on a curved surface. Again, a palmetto leaf must not be burned into the tiles of a fireplace, the two are incongruous and incompatible. Taste and a regard for truth should govern all such work.

We will now briefly enumerate the uses to which photography might be put in decoration.

FOR PANELLING AND FRIEZES.

Panelling and friezes.

Much might be done in this direction by an appropriate choice of subject. For panels bits of landscape of strongly marked types, sea pieces, dead game, and plants might be admirably done. By landscapes of strongly marked type, we mean such things as a dead or leafless tree overhanging a pond, a pollarded willow in winter, and like subjects, where the elements are few, the composition simple, and where there are no subtle atmospheric effects. For this work the subject must be

expressed with great terseness and directness, for the form is what is required, not subtlety of tone or mystery. A group of dead mallard or teal, or an arrangement of bulrushes and water-lilies, are all suitable and admirable subjects. Negatives for this class of work should be rather dense, and as sharply focussed as possible, it being remembered that for form (diagrammatic form) decision is what is required. There are certain subjects, however, which will bear being only just suggested, such as bulrushes, reeds, &c., which are full of character in themselves. These objects should be photographed against flat-tinted backgrounds, the colour chosen being ruled by the colour of the furniture of the room. The best method of procedure would be to sensitize the panel and print directly on to it by the platinotype process, or perhaps by some of the carbon processes, red carbon being especially suitable for this work. The Platinotype Company give directions for sensitizing various surfaces, all of which can be obtained from their offices in Southampton Row, High Holborn.

Negatives.

Red carbon.

Friezes. For friezes, beautiful arrangements could be made of suitably draped figures of girls, of athletes, and of animals, the draped figures being in white, taken against a black background. These subjects printed in red carbon would look admirable if properly arranged. Enlargements could be used in these cases, as it does not matter if the original negatives are made microscopically sharp. Various subjects and methods of treatment will suggest themselves to the thoughtful and artistic student.

Tiles. We cannot help thinking there is great scope for the photographic decoration of tiles. For this purpose, as they are low down and seen close to, tone pictures might be used; any quality of landscape for instance, would be admissible for this work. Mr. Henderson's method of enamelling is fully given in the late Baden-Pritchard's "Studios of Europe."

Windows. There is little or nothing to be done in the decoration of windows by photography. Of course, transparencies will immediately suggest themselves, but they, like modern glass painting, are false art. The first requisite

of glass painting is that all the light possible shall pass through the pane, and that the tints shall be flat. Modern window-painters overstep the limits of the art, and try to render tone as well, the result being bad artistically and bad decoratively, as utility is affected. Glass transparencies and opals are, to our mind, worthless for decorative purposes, and should not be encouraged.

Enamels.

M. Lafon de Camarsac was the first to apply photography to porcelain work, in the year 1854. He worked with colours and produced some marvellous results, applying gold, silver, and various pigments in this way. His method was used for producing enamels for jewellery, but, of course, such things could not be utilized in decorative work, for to produce pictures on tea-cups, saucers, brooches, &c., seems to us, against all principles of truth. We cannot, therefore, advise any one to follow this branch of photography. Perhaps miniature portraits might be produced in this way, however. So we shall give Poitevin's method.

Poitevin's method.

A positive on glass is obtained, and a glass plate is coated with gum sensitized with bi-chromate of potash. The positive is then placed in contact with the prepared plate and exposed to the light, the result being invisible as in carbon printing. A very fine hair sieve is now taken, and dry powdered charcoal is sifted over the coated plate, and it will be found that the charcoal adheres to the parts acted upon by light. Thus is produced a delicate portrait in as perfect tone as the original. This portrait is temporarily secured by brushing it over with collodion. The collodion film has now to be separated by delicate knives, and it brings away with it the charcoal picture. This film is next placed on a white enamelled copper plate, which plates are bought ready prepared, and a fixing paste (that used by ceramic painters being employed) is spread with a brush over the enamel. This paste combines with the charcoal image. All is now ready for placing in the enamelling furnace, when vitrification takes place, and all the organic bodies are destroyed, the vitrified charcoal image alone remaining.

We think that with taste even china services might be decorated by means of photography. At any rate there is a wide field for any one with taste and feeling.

Wall-papers and hangings.

We do not know whether or not photography has been applied to the manufacture of either of these materials, but there is wide scope for it. It must be remembered, however, that definite patterns are obtrusive and undesirable. A rather monotonous geometrical pattern is required, the suggestion, however, coming from nature. Thus a good pattern could be obtained from a transverse section of a rose-bud, or from various seed-cases, such as those of the convolvulus and rose. Histological specimens also, and desmids and diatoms, all suggest beautiful and varied forms of geometrical patterns. This has often occurred to us when examining the wonderfully varied and beautiful forms of the diatom family. It would, it seems to us, be very easy with multiplying backs to get large numbers of a form on one plate, and then to reproduce them by cheap photo-mechanical means, and though we have never yet heard of photographic wall-papers, yet there is no reason why they should not be manufactured, if made artistically.

For hangings these same patterns might be woven in or even printed directly upon the materials, by the platinotype process. The company who brought forward that process keep prepared nainsook, why not other materials? For small things, such as d'Oyleys, an endless and pleasing variety might be introduced.

D'Oyleys.

In short, photography can and should be made amenable to the principles of decorative art, and employed legitimately in thousands of ways; but the student must never forget that he must rigidly and resolutely keep within the bounds of his art, which bounds we have briefly indicated here. Common sense, taste, and study are his best safe-guards. In all attempts, however, let him go to nature for his suggestions; she, if he be humble and patient, will not be less lavish to him than to the painter. So we find ourselves at the end of this chapter, and our considerations on photography as applied to decorative art lead us to conclude that the

form in which it is at present chiefly applied, i.e. transparencies, is false in principle, and therefore undesirable. We felt this long before we studied art at all, and although we made many opals and transparencies at one time, we soon gave them up as vanity and foolishness. Those, however, who with training and artistic feeling care to explore the undeveloped fields above indicated, will be sure to find many new treasures.

L'ENVOI.

PHOTOGRAPHY—A PICTORIAL ART.

It is easier to carp at the light-bearing goddess than to imitate her works.

"In such an age as this, painting should be *understood,* not looked on with blind wonder, nor considered only as poetic inspiration, but as a pursuit, *legitimate, scientific,* and *mechanical.*"

JOHN CONSTABLE.

L'ENVOI.

PHOTOGRAPHY—A PICTORIAL ART.

The aim.

We wish from the first to make it clearly understood as to what is our object in comparing photography with the other pictorial arts. It is not to condemn any of the other arts as inadequate for artistic expression, for we hold that *good art,* as expressed even by a lead pencil, is better than bad art expressed on the largest of canvasses, but our object is to inquire what position the technique of photography takes when regarded side by side with the methods and limits of each of the pictorial arts. The earliest pictorial expressions of the human mind were, as we all know, rude rock-scratchings in the form of outline. This outline drawing served the earliest nations, as it still serves children, to express in a conventional way certain limited truths, for the power of seeing and analyzing nature is of recent development, and is even now far from fully developed. Keeping this in mind, we must nevertheless not allow ourselves to despise these efforts of the undeveloped mind. Line drawing, it must be remembered, has nothing to do with tone. If you look at a line drawing of a figure by a great master, it suggests to you, in a certain limited way, the real thing, for the lines bound spaces, hence there is a suggestion of the solid figure. With almost any medium, even with pen, ink, and paper, an artist will often draw a subject in outline, to see "how it will come." Sculptors nearly always do this, but these men do not consider these outlines as finished works, but simply as an aid to their work,—mere brief sketches suggestive of what shall be. Of course, such notes when done by a great artist become invaluable, as suggesting great truth of impression. Yet there are men

Rock scratchings. Outline drawing.

who seem to stop at this stage, and revel in "beauty of line," or else they elaborate these drawings until they pass beyond the legitimate limits of the art by which they are expressed.

We will now briefly enumerate these arts with their limitations.

Lead pencil.

Lead Pencil.—The scale between the white and black is very limited, for, as any one who has drawn with lead pencil will remember, the lowest tones are grey as compared with dead black. They are also shiny because light is reflected by the plumbago. An artist can, however, express a suggestion of tone within a limited scale, and, notwithstanding this limitation, a first-rate lead pencil drawing may give a far truer impression of nature than a bad painting, and will accordingly rank higher artistically.

Pen and ink.

Pen and Ink.—The scale in this case is also limited and there can be no tone, but an artist, by "cross-hatching," can give an impression of tone, as can be seen in the clever drawings by an artist in the German *Punch*. Of course, as in lead pencil drawings, all subtle tonality is left out, the lightest tones being lost in white, and the darkest in black, but the suggestion may be a truthful impression if well done, and in such cases the work commands the greatest respect, ranking far higher than inferior work done with a more perfect technique. Sometimes washes are added to pen-and-ink drawings to increase the impression of tone. Here, again, the bad artist goes beyond the legitimate limits of the art, by the pen rendering detail, and by the wash-rendering tone, impossibilities except in monochrome work. We have seen some detestable hybrids of this class, the result of the misspent energies of amateurs.

Chalk.

Chalk.—This gives the artist greater scope, for his scale is greater, and, in addition, chalk is not shiny and unnatural. This material is generally used for large work, and is better suited to that purpose, for the line is not so regular and has more of the decision and indecision of a natural outline as seen in a figure standing against a background. By choosing an appropriately colored

chalk an artist can give a potent suggestion of texture, and, therefore, of truthfulness. Chalk was formerly much used for studies, but charcoal has now largely taken its place.

Lithography. Lithography.—In this art a peculiar stone is chosen, which has an affinity for water and grease. The stone is drawn upon with a greasy, specially prepared lithographic ink. From this many copies can be taken. For reproducing chalk drawings the method is worked a little differently. It is of little use now for original work, on account of the introduction of the cheaper, more certain, and more beautiful photographic processes. We are all only too well acquainted with the outcome of this process of lithography, chromo-lithographs,—monstrosities which, it is needless to say, do not enter into the category of the fine arts. Chromo-lithography, however, has a commercial value, being very useful in the reproduction of patterns, &c.

Line engraving. Engraving.—This is drawing on metal with a burin in a special manner; that is by pushing the burin away from the operator. Considerable pressure must be exerted; and it is evident that lines cut in this way must be formal. It is, perhaps, for this reason that it is scarcely ever used for original work, but only for copying. The scale in this case is limited between the black ink and white paper, and is greater than in the arts above dealt with; but there can be no subtleties of tone. Engravers supply this suggestion of tone by cross-hatching, and so suggest a natural impression, as can be seen in some of the landscapes engraved from nature by Albert Durer. Personally we are but very little interested in engraving apart from its historical interest. Artistically, the early work of Durer, and some of that of the so-called "little masters" is, in our opinion, the best ever done. All the work—and there is much of it—which has overstepped the narrow limits of the art of line engraving is to us distasteful, because it could have been so much better expressed by other methods. Engraving with a burin, even when assisted by dry point work, is always hard, formal, textureless, and without tonal subtlety; while the

quality of modern engravings, by which popular editions of well-known authors are illustrated, is to us positively unpleasing and false. There is at the present day a vigorous attempt to bolster up engraving, and give it a fictitious value, but we feel sure it is doomed. Such a narrow, limited, untrue method of expression could never live beyond the day of necessity, when there was no better mode of expression. That day is already past, as there exist more complete methods. A good pen-and-ink work by Du Maurier is, artistically, far better than any engraving Cousins ever did; and as for the fearful travesties exposed for sale in dealer's windows, we can only wonder who buys them. Perhaps the same mild imbeciles who collect "old engravings" promiscuously, not for any art qualities they possess, for the best of them are bad in many ways, but in order to collect, and appear learned (?) and artistic (?) to their less gifted (in purse) brethren. Of all the painters and sculptors we have known, we have never found one really interested in the class of engravings we are now describing.

Stippling, or engraving in dots, seems to us a yet worse device than cross-hatching. It is done with prepared needles, or a toothed wheel called a roulette. Stippling was by Bartolozzi and others combined with etching, and a hybrid was produced which, like all hybrids, was doomed to extinction.

As compared with photogravure for the reproduction of pictures, no one but a fanatic would maintain its superiority. By using orthochromatic plates relatively, true values or tone, and even texture can be rendered, and no translator steps in to add to, or subtract from, the originality of the work. The student will soon find as he studies nature and the best art together, that engraving is but a sorry method, its artificiality will soon disgust him, and no one with any real insight into the mysteries of nature can derive much pleasure from engravings, except, perhaps, from some of the best of the simple line engravings, such as some of Durer's works.

Wood engraving.

Wood engraving.—In wood cutting the parts left uncut print dark, and those that are hollowed out or cut

away do not print at all; thus, the white is cut out from a dark ground. The workman cuts with special graving tools on a block of box-wood, cut sectionally. Durer's woodcuts are simply drawings on wood, parts of the wood being cut away, for in this way many could be readily printed. They were simply fac-similes of the lines of Durer's drawing, and had no artistic aim of their own. With Bewick, however, the matter was different. He saw the limits of wood engraving, and kept resolutely within those limits, like the true artist he was. Bewick.

With Bewick the flat black and white spaces were the limitations, as we consider they are and always will be for original work, notwithstanding the American school of wood engraving, of which we shall have something to say presently. The scale in wood engraving is limited by the ink and paper, and the suggestion of tone is got by representing the light greys as white, and the darker darks as blacks. There is no subtle tonality in Bewick's work, and though there is much suggestion of nature and truth, the expression is limited. But here, as in other arts, directly the legitimate limit is overstepped the work becomes bad. Bewick, of course, and a few of his pupils, did original work, but the modern wood engraver, though he expresses greater subtlety of tone, is, after all, only a fac-simile worker. In the American magazines the perfection of this fac-simile work is to be seen, and, in our opinion, this school started with the intention of imitating the delicacies of photography. That such work is most useful no one can doubt, but in our opinion it has outstepped the proper limits of wood engraving, and therefore no longer interests us. It must not be forgotten, too, that the works are fac-simile work and not original. In fact, a good fac-simile wood engraver may be no artist at all. It serves a certain use certainly, but, judged by artistic standards, an intaglio copper-plate print produced by photography is far more satisfactory. Would, however, that all the art-craftsmen who work in fac-simile, kept up to the standard of the American engravers, for the feeble works of this class to be seen in this country in the book and American wood engravers.

paper illustrations of the day are lamentable. They are travesties of nature; but what more can be expected when a block is often cut in separate pieces by different workmen? Lamentable, too, is it that many a good photograph, brought home by travellers from abroad, should be botched and ruined by these wood engravers.

A great deal of cant has been talked lately about the harm done to engraving by photography. The harm was done long ago, when artists ceased to practise the art of engraving as an original art, as was done by Bewick and some few others, and when the work of cheap reproduction fell into the hands of craftsmen. If photographic processes do anything, they will either raise the standard of fac-simile art-craft by competition, or, which would be, perhaps, as well, will kill it altogether. For artists in wood engraving like Bewick there is always room; and among the first to appreciate such work and to foster it, will be the artist who works in photography; he will understand the limits of the art, and appreciate any artist who uses it artistically.

Etching. Etching.—As the public become more educated in art matters, we find etching rapidly replacing line engraving, just as we think original photogravures will in time replace etchings.

Etching is drawing on zinc or copper with a needle, the plate being first prepared with a ground, the nature of which varies with different practitioners. Wax, burgundy pitch, and asphaltum form a common combination for producing a ground. This ground is often smoked to produce a uniform surface, and then the artist sketches on it as freely and lightly as he would on paper. The lines are afterwards bitten in by immersing the plate in acid. Some etchers assert that they etch whilst the plate is in the bath, but we cannot imagine such a method being very successful, for want of proper control over the work. Tone is produced by thickness of lines and by cross-hatching, and also by the printer in the manner of wiping the plate, and finally touches are added with a dry point. In addition separate bitings can be given to a plate by "stopping out" the portion not requiring further biting,

with some substance which resists the acid, usually a varnish. Another method is to silver the plate and cover it with a white wax ground, so that the etcher gets a dark line on a white surface. The plate is finally covered with a thin coating of steel by electricity, this process being called "acierage." This facing is given to the plate to resist the wear and tear of printing.

Etching, it will be seen, is far more amenable to the artist's will than line engraving and wood-cutting. Still it has its limits, for in it all the subtleties of tone are wanting, and there is, therefore, imperfect modelling. The values cannot be relatively truly rendered, nor is texture well rendered. All this great artists have recognized and have therefore resolutely confined themselves within the legitimate limits. The masters of etching, as Rembrandt in the past and Whistler in the present day, never try for delicacies of tone in their plates, but by line and cross-hatching, like an artist in pen and ink, they express themselves, and their works are beautiful and priceless. But as with all the other arts, so with etching, inferior men have tried by this method to rival more complete methods, and the result has been failure. By complicated line work and by printing flat tones, etchers are daily striving to express in translation the perfect technique of painting, and the results are unsatisfactory. Here, again, we find that the art-craftsmen, the translators of pictures, and not original artists, are the chief sinners, and this is a fact to be carefully remembered. A good etching by Rembrandt or Whistler gives us a satisfaction we cannot well express; but carefully elaborated etchings from pictures give us no satisfaction; on the contrary, they have gone so far that they compel us to compare the work with a more complete technique, and the result is great disappointment.

As mere art-craft for the translation of pictures, photogravure will give etching points (points not of taste but of artistic facts), and beat it hollow, as any first-rate painter will allow. The best etchers we have met are unanimous in condemning elaborated work in etching, and they themselves work within the limits of its

technique. Equally averse are they to the hybrid process of combining etching with photogravure, a hybrid only practised by inferior men and appreciated by the untrained.

We must now leave line work, for though, as we have shown, very subtle suggestions of tone can be obtained by the use of cross-hatching, still true tonality and modelling cannot be obtained by any save more perfect methods. Directly an artist has a method by which he can express subtle tonality, he has a great additional power.

Charcoal. Charcoal.—With this method the scale is limited as the black is not so deep as many other blacks used in the arts, but by its means delicate tonality can be obtained, but not the most delicate, as the "atmosphere" in charcoal drawing is always tinted. The values too in a charcoal drawing are not true for this reason, because the most delicate light greys are lost; neither do we like the texture it gives. It is not true, nevertheless the result is often very fine. We had quite lately the opportunity of comparing the charcoal drawing of a very fine subject with nature, and also with a very fine painting of the same subject, and our opinion is that the charcoal drawing suggested the scene better than any line method could have done, but the suggestion was very far off the suggestion offered by the painting.

Monochrome. Monochrome Painting.—A monochrome painting may be in any colour, but of course the scale is so limited, say in red for example, and the effect, except for portraits, would be so incongruous that no artist would use it. Indian ink and sepia are the commonest tints used. Monochrome painting, did it portray the hues of the colours, would follow the same laws as painting, and would have to be considered from the same stand-point. Therein then lies the difference, a good artist may express much in monochrome, and give the suggestion of nature to a very great extent, but he is limited by this method. Delicate tonality and modelling can be obtained, but there is an unnatural transparency of the middle tints and an artificial look in the textures. Notwithstanding, very fine work is done in this way, especially by some of the modern French and Dutch painters.

Aquatint, as its name implies, is a form of engraving by which to reproduce water-colours. The plate is prepared in much the same way as it is for photogravure, the acid biting between the dots of resin. As a method of expression *per se* aquatint is not satisfactory and rarely employed. Aquatint.

Mezzotint.—In this process the plate is roughened all over by an instrument called a "cradle" or *berceau*. This is really a broad chisel with a cradle-shaped edge, on which are small rough edges. This is worked by the hand all over the plate until it is rough enough to hold ink. The scale in this method is wide, the blacks being very deep. The tones are formed by scraping away the ink by the engraver, the highest light being the deepest. It gives a very perfect tonality, and is really the only rival to photogravure, but the plate will not last well, thirty good prints often being all that can be taken from a plate. The engraver, too, has not sufficient control over his work. As a rule it is only used for fac-simile work, and not for original work. It will in our opinion be the last form of engraving to succumb to photogravure. It is better suited for portraiture than landscape work; the mezzotints from Constable's paintings are very feeble and untrue. Mezzotint.

Photography.—Now we come to photography, which possesses a technique more perfect than any of the arts yet treated of. Photography, in fact, stands at the top of the second or tone class of methods of expression; so nearly perfect is its technique that in some respects it may be compared with the third, or colour class. The scale here, too, is limited, but less so than that of any other black and white method. Its drawing is all but absolutely correct, that is if the lenses are properly used, as has been shown. It renders the values relatively correct if orthochromatic plates are used, and it renders texture *perfectly*. Its one limitation is that it must always be worked from models; but from what we have already said, we consider this no limit of consequence when the end in view is artistic expression. When, on the other hand, the end in view is utilitarian, this is, in certain cases, a limitation, but as we are considering it only as a method for artistic ex- Photography.

pression, we do not now consider that side of the question. As a facsimile method, it is unrivalled, for the art-craftsmen who have worked in this direction have so perfected it that little now remains to be done so far as copperplate work goes, though much remains to be done in connection with delicate blocks for the printing-press. As a recorder of scientific facts and as an adjunct to the traveller, it has no equal, for nothing need be allowed for the personal equation of the individual. Its immense value in all the sciences and arts have been touched upon. Critics opposed to photography, and they are now-a-days the old and prejudiced, are fond of citing Mr. P. G. Hamerton's reasons for not considering photography one of the graphic arts. Some of his arguments were perfectly admissible when he wrote them, but as he has not taken the trouble to correct them since, we suppose he still rests in the fancied security of having slain photography for ever. But photography was not killed by Mr. Hamerton. It could not resist him then, for it was but a little child, but now that it is well grown and can resist him it will do so through us here.

Mr. Hamerton criticised.

Mr. Hamerton says when any new art is under consideration, we must ask, "Can it interpret nature? Can it express emotions? Can it express fact and truth and poetry? Within what limit can it do these things? and finally has any one with it expressed human knowledge and feeling? Will it record the results of human observation? Has it ever been practised by great men, or do they pay much regard to it?"

Beginning, then, with question I.:—

Can it interpret nature? Yes, that at any rate is the opinion of more than one good sculptor, painter, and photographer, and plates can be produced which we challenge any one to prove are not interpretations of nature in the strictest sense.

II. Can it express emotions? Yes, and so faithfully and subtilely that the late Charles Darwin used it to illustrate from nature, his work "On the Expression of Emotions in Man and Animals." Of these photographs taken by Rejlander, Mr. Darwin writes in the work men-

tioned, "Several of the figures in these seven heliotype plates have been reproduced from photographs, instead of from the original negatives; and they are in consequence somewhat indistinct; nevertheless, they are faithful copies, and are much superior for my purpose to any drawing, however carefully executed."

III. Can it express fact and truth? Yes, and there is no need to say any more on this head, except that it can express fact and truth more perfectly than any other black and white process. It is not absolutely perfect, but no art is.

IV. Within what limits can it do these things? The answer to this we have shown in this work.

V. Has it ever been practised by great men? Yes, and is practised now by many of our greatest living painters and sculptors, whose names we could give.

Adam Salomon's portraits.

M. Adam Salomon, a sculptor of great abilty, a Chevalier of the Legion of Honour, took the photographic world by storm, by his portraits exhibited at the Paris Exhibition of 1867, and he continued to practise it up to within a short time of his death. Let the best sculptors and painters be asked how they regard photography—especially when they are at work on posthumous works. Finally we will give here an opinion on photography as written by an able landscape painter—namely, T. F. Goodall.

"Photography has undoubtedly played an important part in the development of modern art, both in figure and landscape. In landscapes we are inclined to think that the influence of photography was for a time hurtful, for this reason, painters were apt to emulate the detail of the photograph, and lose the breadth of man's view of Nature in consequence. They did not take into account the fact that the lens commonly used was a more powerful mechanism than the human eye, or that it reproduced at once every detail of a scene with more distinctness on the plate than the eye would on the retina, even if the attention was concentrated on one part only at a time, and that therefore the resulting picture was not a true representation of Nature, as impressed on the

mind by human vision. But for artistic purposes this may be remedied, and it appears to us that photographers must take the point into consideration if they would use the camera as a means of artistic expression. Hitherto the chief aim of the photographer seems to have been a biting sharpness of detail in the negative, which is generally quite fatal to the result from an artistic point of view, for in breadth lies the beauty and sentiment of landscape. To produce a picture the photographer must select his lens and adjust his focus, so as to get an expression as nearly identical with the visual one as possible, and he must print in such good tone as will give the closest approximation to the values in nature. In all these matters the result will depend on the taste and intelligence of the author, and bear the impress of his mind. If that be commonplace, his negative will be so also; if artistic, so will be his picture. There is no reason why photography, in capable hands, may not be made a means of interpreting nature second only in value to painting itself, destined to supersede all other black and white methods in bringing an extended knowledge of and taste for art to the masses of the people. The prejudice existing against photography arises from the fact that hitherto it has been worked merely as a mechanical process; but if by results it can show that it is worthy, it will rank as a fine art. Dr. Emerson was the first to advocate rationally the claims of photography to this distinction, and, artists will admit, has by his subsequent work made good his position so far as his own productions are concerned. There should be a great future for photography if followed on really artistic lines. It should be hailed as a most powerful ally by the modern school of painting, as by means of it people may be taught to perceive how false are many of the pictures they believe in, and how much more beautiful and interesting is truth. From an art-educational point of view its value can scarcely be overrated; much has been done, by photogravure and other processes of reproduction, to spread a knowledge of pictures, and there is no reason why the same methods should not be

used for original work. A good photogravure is to be preferred to a bad painting or second-rate engraving, and is incomparably better than the odious chromos and wretched prints with which so many walls are disfigured.

If, instead of being satisfied with mere topographical views or foreground sketches, the photographer has cultivated artistic feeling, means are at his command for communicating to others what has impressed himself, and he may produce work of permanent value. Everything depends on what he finds to say and how he tells it. If the operator has artistic insight, it will show itself in his negative, just as it would on his canvas, if he were a painter. The mechanical and chemical processes, the practical judgment necessary in timing his exposures, the skill and knowledge necessary in developing his plates; these are his technique; but the art value of the result will depend on what he communicates to us by its aid. As long as his ideas of pictorial art are confined in landscape to views of churches and ruins, rustic bridges and waterfalls, or topographical views of the haunts of tourists, taken from the guide-book point of view, and in figure to artificial compositions, reminding one of an amateur theatrical performance, so long will his work be destitute of artistic qualities, and therefore valueless, but if he brings to his work a genuine appreciation of the picturesque in landscape and figure, and a knowledge of how so to place a subject on his plate as to convey his impressions to others, he may produce most beautiful and meritorious results. He must learn, as the painter has to do, to distinguish what in nature is really suitable for pictorial purposes, on account of beauty of form, or tone, from what merely gives him pleasure by some quality which, however impressive in nature, it is not possible to transfer to canvas. A picture being a design enclosed by four straight lines, can only please and impress by certain suitable decorative qualities in the subject. To know what will make a picture is one of the most difficult secrets in landscape art; knowing just how much of a scene to take in, where to begin and

where to end, decides whether the result will carry a distinct and complete impression, or be merely a haphazard study."

What great artists elsewhere thought of photography is shown by the following extract from one of J. F. Millet's letters to his friend Feuardent. After asking Feuardent to bring him some photographs from Italy, Millet continues, "In fact, bring whatever you find, figures and animals. Diaz's son, the one who died, brought some very good ones, sheep among other things. Of figures, take of course those that smack least of the Academy and the model—in fact all that is good, ancient or modern."

The daily use made of photography by artists is another proof of the good opinion in which it is held by them. You could not get these men to say a word in favour of chromo-lithography, because that is a hybrid craft with few possibilities. These questions being disposed of, we will proceed to discuss an assertion of Mr. Hamerton's, that photography is like a reflection in a mirror. Now from what we have shown in this book, means are at the artist's command to influence the final picture in every stage of its development. If an artist such as Carolus Duran, say, were thoroughly versed in photography, and a craftsman, like one of the numerous operators employed by the large photographic firms, were to be placed together, say on one of the Norfolk Broads for a week, according to Mr. Hamerton's *reflection theory*, they would both return with work of the same quality, differing only in point of view; for Duran's reflections would be the same as the craftsman's, point of view always excepted. A theory that allows such an absurd application needs little comment, one remark only will we put forward. In what ignorance of optics Mr. Hamerton has allowed himself to remain! when every one knows that a reflection in a mirror is a virtual image, and *does not exist.* By pushing this theory to its logical conclusion, a monkey with a camera could produce as good pictures as Mr. Hamerton could make with the same instrument.

In "Thoughts on Art" Mr. Hamerton speciously compares photography with painting. Why not compare it with etching? It can never be compared with painting until photography in natural colours is an accomplished fact. Mr. Hamerton, after speaking of the limited scale of light in all art, goes on to say, "But look at poor photography's scale compared with the scale in painting." Just so, but it has a *much greater* scale than any other black and white method, far greater than the scale of his pet etching. Why did he not state this? Why did he ignore it? Further on Mr. Hamerton enunciates that if we expose for the glitter of the sea, everything on the bank will be without detail. It is unnecessary to say this is not so, and any good photographer can easily prove this statement. Of course the only excuse for these untrue statements is that such marvellous strides have been made in what is called "instantaneous photography" since Mr. Hamerton committed his criticisms to paper (in 1860), that probably he does not know that photographs can now be taken at midnight by a *flash of light* in a fraction of a second, and with very fair results, as any one can prove for himself. Mr. Hamerton finds too that the *sum* of detail in good topographical drawings is greater than that in a good photograph. Well, Mr. Hamerton may do so, just as some people see green as red, but all good photographers will laugh at the statement, and we challenge Mr. Hamerton that we will produce a greater *sum* of detail in a photograph of a set subject than he will by any amount of drawing, and consider it no great feat either. But this has nothing to do with the artistic value of photography, or with its comparison with painting. Mr. Hamerton is here comparing it with architectural drawing.

Mr. Hamerton next says the drawing of mountains is false in photography. If that were so in 1860, it was Mr. Hamerton's fault for ignorantly using his lens, for, as we have shown, lenses are true perspective delineators *if correctly used.*

Finally Mr. Hamerton, in 1873, sums up *his* objections

to photography from the purely artistic point, as follow:—

I. "It is false in local colour, putting all the lights and darks of natural colouring out of tone." With the aid of orthochromatic plates it does no such thing, as any reader can prove for himself by getting a chromograph with yellow, red, blue, or any other bright colours, photographed by Mr. Dixon, of 112, Albany Street, London.

II. "It is false in light, not being able to make those subdivisions in the scale which are necessary to relative truth." This is not so. It is false in light so far as all art is false in light, but photography can make more subtle distinctions in the scale than any other known black and white method.

III. "It is false in perspective, and consequently in the proportions of forms." It is not. This remark convicts Mr. Hamerton of ignorance of optics and the proper use of photographic lenses. Vide Cap. II.

IV. "Its literalness, incapacity of selection, and emphasis, are antagonistic to the artistic spirit." Photography is not literal, as the flexible technique shows; it is capable of selection almost to any extent, though, of course, it is incapable of leaving out a tree, and putting in an imaginary man. What an incapacity for emphasis means, we neither know nor care to know.

Answers to other criticisms.

Following in Mr. Hamerton's steps other critics have raised their objections to photography, and these we shall discuss briefly.

"A photograph," it has been said, "shows the art of nature rather than the art of the artist." This is mere nonsense, as the same remark might be applied equally well to all the fine arts. Nature does not jump into the camera, focus itself, expose itself, develop itself, and print itself. On the contrary, the artist, using photography as a medium, chooses his subject, selects his details, generalizes the whole in the way we have shown, and thus gives his view of nature. This is not copying or imitating nature, but interpreting her, and this is all any artist can do, and how perfectly he does it, depends on his technique, and his knowledge of this technique; and the resulting picture, by whatever method expressed, will be

beautiful proportionately to the beauty of the original and the ability of the artist. These remarks apply equally to the critics who call pictures "bits of nature cut out." There is no need to slay the slain, and give any further answer to the objection that photography is a mechanical process, if there were, it would be enough to remind the objectors that if twenty photographers were sent to a district of limited area, and told to take a given composition, the result would be twenty different renderings. Photographs of any artistic quality have individuality as much as any other works of art, and of the few photographers who send artistic work to our exhibitions, we would wager to tell by whom each picture is done. Of course, the ordinary art-craftsman has no individuality, any more than the reproducer of an architectural or mechanical drawing. But where an artist uses photography to interpret nature, his work will always have individuality, and the strength of the individuality will, of course, vary in proportion to his capacity.

Photography has been called an "irresponsive medium." This is much the same as calling it a mechanical process, and, therefore, disposed of, we venture to think. A great paradox which has to be combatted, is the assumption that because photography is not "hand-work," as the public say,—though we find there is very much "hand-work *and* head-work" in it—therefore, it is not an Art language. This is a fallacy born of thoughtlessness. The painter learns his technique in order to speak, and as more than one painter has told us, "painting is a mental process," and as for the technique they could almost do that with their feet. So with photography, speaking artistically of it, it is a very severe mental process, and taxes all the artist's energies even after he has mastered his technique. The point is, *what you have to say, and how to say it.* It would be as reasonable to object to a poet printing his verse in type instead of writing it in old Gothic with a quill pen on asses' skin. Coupled with this accusation, goes that of want of originality. The originality of a work of art, it should be needless to say, refers to the originality of the thing expressed

and the way it is expressed, whether it be in poetry, photography, or painting, and the original artist is surely he who seizes new and subtle impressions from nature, "tears them forth from nature," as Durer said, and lays them before the world by means of the technique at his command. That one technique is more difficult than another to learn, no one will deny, but the greatest thoughts have been expressed by means of the simplest technique—namely writing.

As we have shown, all arts are limited, some in one way, some in another, two limitations of photography are that it "cannot express an intention" and "it must take whatever is before it." We shall endeavour to answer these objections, which we frankly allow are the only serious objections to be brought against it. "It cannot express an intention." This, at first sight, seems an insuperable objection, but on reflection it is no real objection at all when the object of photography is artistic expression. As we pointed out in Book I., it is our opinion that all the best art has been done direct from nature, and that no "intention" requires expression. No artist worthy of the name ever drew a picture evolved from his inner consciousness; if it is a brief note to see how a thing will come; it is either from nature, or from his remembrance of nature. The photographer then must compose on his ground glass or in nature, or if he wants to see how it will come, he too can draw the lines on his ground glass. But the great point is, such drawing is perfectly unnecessary for artistic purposes; only for architectural uses is it necessary, for the architect must draw a plan of his building before it can be built. This distinction has either been overlooked or speciously suppressed by Mr. Hamerton. But then we have nothing to do with architectural drawing; and if in this instance photography cannot help the architectural draughtsman, yet there are hundreds of instances in scientific studies in which *nothing can help so well as photography*, for example, in astronomy, spectral analysis, bacteriology, &c., &c. Finally, we are not aware that sculpture can help the architectural draughtsman. The second objection that

the camera will take everything before it, is not of any vital importance. It only makes the field to select from more limited, and gives the artist greater credit when he does a good thing. And if we are true to one of our principles, namely, that the subject should so strike the artist that he wishes only to reproduce it, it is no objection at all, for a subject with an eyesore marring it would not, or should not, appeal to the artist sufficiently to make him wish to reproduce it. We will also give the opinion of a painter on this point. Mr. Goodall writes:—"These two subjects serve well to illustrate how unnecessary it is to alter the natural arrangement of things in order to make a picture. Although they are literal transcripts, it is hard to find a line in them which could be altered with advantage. The designs presented by nature ready made, always interest us far more than the artificial compositions of painters who pick and choose, arrange and alter, the material around them in constructing their pictures. When a picture is patched together, as it were, a bit here and a bit there, whatever the gain in composition, there is always a more than corresponding loss in those little subtleties which give quality to the work. If the beauty of a subject in nature does not appeal to the painter with sufficient force to make him wish to paint it exactly as it is, he had better leave it alone altogether, and seek some other that does. A man must be moved too deeply by something to dream of improving it by alterations, before he can possibly paint a really good picture." But has not this very limitation its advantages as well as its disadvantages? There can be no scamping or dishonest work, and the artist must always go to nature. Had the ancient Greeks known and handed down photography—and a sculptor friend of ours is inclined to think they did have something of the kind—there would not have followed the terrible decadence in art which came after them owing to the neglect of nature, as we have shown. Again, an *immense power which photography possesses over any other art is the rapidity with which an effect can be secured.* The painter is limited to a portion of the day—his effect is

only present at certain times, or his model tires ; but the artist working with photography, when he sees his effect is right, can secure it in the twinkling of an eye. This advantage over all the other arts far outweighs the limitation of the field of selection.

It has been said, "The camera sees far more than the eye takes in at any given moment, and sees it with an impartiality for which there is no parallel in the human vision." This objection has been answered in the body of the work ; it only holds true with bad work, and with that we are in no way concerned.

A kindly critic, who did us the honour of reviewing us in the *Spectator,* said if our "contention were true, painting would have said its last word, and sculpture would no doubt soon be superseded by some mechanical contrivance, which would be to clay and marble what the camera is to plane surfaces." Now we must break a lance with this reviewer and gentleman ; we wish all reviewers deserved the last title. We fail to see why painting should have said its last word—for our contention *is true—pace* with our reviewer. The great fact of colour alone places true painting as a method of expression far above any other method. When photographs can be taken in natural colours, then will be the time to discuss the probable dying groans of painting. As to sculpture, it seems to us useless to discuss the merits of "probable mechanical contrivances ;" when they are invented the time will come to discuss them. At present the only comparison that can be made is that between a cast of, say, a hand from life, and a modelled hand. When this comparison is made, the "cast from life" will be found poor and mean—*it is not a true impression.* The modelled hand may be so, if the sculptor is good. It is of course needless to point out that the principle of tone holds in sculpture as in painting, but the cast from life cannot have subtleties of tone for a very obvious physiological reason, namely, reflex action. If you touch a hand with a foreign substance, reflex action is set up, and there is an alteration in the heights and depths of the modelling, and the play of light gives a different

impression. Now, when a living hand is covered with plaster a rough model is obtained—a model of its structure merely, and all the subtleties of tone are lost. Those subtleties would, however, all be given in a photograph, for nothing is touched, and a true impression is rendered of the hand. What more hideous travesty of nature is there than a cast taken from a dead subject—the cast being merely an exaggeration of the faults in a cast taken from life?

Here, then, we must leave photography *at the head of the methods for interpreting nature in monochrome*, and we feel sure that any one who comes to the study of photography with an unbiassed mind will admit there is no case to be made out against it as a means of artistic expression. This much has been allowed by very many of our friends, who are at the same time accomplished artists—etchers, painters, and sculptors.

The student must remember, then, that a first-rate photograph, like a first-rate pencil drawing, pen-and-ink drawing, etching, or mezzotint, is far and away superior to a second-rate painting. The greatest geniuses in art will admire the one and will not tolerate the other; but the student must also remember that a second-rate "picture" is worse than nothing.

The student should acquaint himself with the best specimens of the various pictorial arts mentioned in this chapter, and he can do this with little difficulty by obtaining a ticket for the print-room at the British Museum; while in the provinces there are no doubt good specimens at the local galleries. Cambridge, we know, is very rich in Rembrandt's work. The masters in each department whose work we recommend for study are—

Some masters of the minor arts.

In Lead Pencil.—Harding and Bonnington in England, and Ingres in France.

Pen and Ink.—Titian, Albert Durer, Rembrandt, Fortuny, Rousseau, abroad; and among Englishmen—Leech, Caldecott, Du Maurier.

Chalk.—Da Vinci, Andrea del Sarto, Rembrandt, Raphael, Titian, Constable, and Millet.

Lithography.—Harding.

Chromo-lithography.—Greg.

Line Engraving.—Albert Durer, and Cousins.

Wood Engraving —Bewick, and Linton.

Facsimile Wood Engraving.—"The Century," Scribner's, and Harper's Magazines.

Etching.—Rembrandt, Millet, Meryon, Rajon, and Whistler.

Facsimile Etching.—Brunet-Debaines.

Charcoal.—Lhermitte.

Monochrome Painting.—Mauve, Rossi, Rowbotham.

Mezzotint.—Turner's and Lupton's reproductions of some of the plates of Turner's "Liber Studiorum," Smith's reproductions of Sir Joshua Reynolds' pictures, and Lucas' plates after Constable.

Photography.—Adam Salomon and Rejlander.

Photogravure in facsimile.—A. Dawson, W. Colls, and Autotype Co.

Final. It must not be forgotten that water-colour drawing and etching have both been despised in their time by artists, dealers, and the public, but they have lived to conquer for themselves places of honour. The promising boy, photography, is but fifty years old. What prophet will venture to cast his horoscope for the year 2000?

APPENDIX.

"*Very few poets* get their inspiration from nature. The majority of them have read other poets, and they use the same ideas, clothed in different language. The painter has to go directly to nature, or he is a mere copyist. He cannot paint his picture like somebody else. He must tell his own story if he has any to tell. Please to look out of the window! You'll get something different from what you get out of books, for it never has been seen before!"

W. Hunt.

APPENDIX.

Books on art.

We are continually receiving letters from correspondents asking us to recommend them some books on art.

Now we can deeply sympathize with these earnest fellow-workers, for at one period we wasted much time in vexation of soul in reading the works of "self-appointed preachers, who knew many things save their subject." When we endeavoured to learn something of art we put the very same question to our teachers, and the answer came, "There is nothing worth reading; some good things have been written by painters but they are old now, for art has developed greatly of late years, one thing only we can advise you, don't read anything not written by a practical man."

When we came to consider the writings of artists, we found that but very little had been written by them, and we can only repeat to the student, with the full conviction of experience, that he must read nothing save that written by practical artists.

Technique of art.

The technique of art can be taught in studios, and its principles can be scientifically recorded, but the poetry of art cannot be taught, only hints can be thrown out. The poetic qualities which make an artist as distinguished from the craftsman are born in the man and cannot be acquired by any amount of training. It is for this reason we must suppose that artists have, as a rule, thrown out suggestions and hints rather than enunciated any laws: these hints and suggestions, then, coupled often with the rhapsodies of literary men, form the body of all writings on art.

Books recommended.

The only books we know of from which the student will derive some benefit are Leslie's "Life of John Constable."

William Hunt's "Talks about Art."—This excellent little book is often contradictory and illogical, but nevertheless we heartily recommend it.

Photographic libraries.

In the body of this work we spoke of recommending a few books which every photographer should have in his library, and if he has no library he should at once make a modest beginning. The library is, to the intellectual man, the armoury where are kept the arms of which he must avail himself in the battle for truth.

Every photographic society in the world, worthy of the name, should collect all journals, pamphlets, and books bearing on photography, as well as all books illustrated by photography and photographic processes. Scrap-books should be kept in which are pasted all newspaper and magazine articles on photographic subjects. Photography is but young, and there is plenty of time to make such a collection complete. If all the numerous societies subscribed, it might be worth while even to reprint whole volumes of rare journals.

The numerous photographic societies in this country could easily get library subscriptions, or even organize entertainments amongst their members and friends to procure the necessary funds for a library.

The Camera Club has set an admirable example in this direction which will no doubt be followed. Among the books we should recommend the student to begin with are—

Books recommended.

Captain Abney's *Treatise on Photography*, Longman and Co.

Professor Tyndall's *Lectures on Light*, Longman and Co.

Dr. Lömmer's *Optics and Light* } International Science Series.

Dr. Vogel's *Chemistry of Light and Photography* } International Science Series.

Mr. Sawyer's *ABC of Carbon Printing.* The Autotype Company.

Dr. Eder's *Modern Dry Plates*, Piper, Carter, and Co.

Dr. Ganot's *Physics*, Longman and Co.

Professor Roscoe's *Lessons in Elementary Chemistry*, Macmillan.

The late Professor Bloxam's *Laboratory Teaching*, Macmillan.

Messrs. Hardwich and Taylor's *Photographic Chemistry*, Churchill.

Mr. Jerome Harrison's *History of Photography*, Trübner and Co.

Dr. Wilson's edition of Burnet's *Treatise on Painting.* This book can be obtained of Messrs. Lund and Co., St. John Street, Bradford.

The late Mr. Baden Pritchard's *Photographic Studios of Europe*, Piper, Carter, and Co.

Mr. Bolas' Cantor *Lectures on Photo-mechanical Processes*, Piper, Carter, and Co.

Mr. Hodgson's *Modern Methods of Book Illustration.*—Mr. Hodgson's was the first book on photo-mechanical processes, and it still remains the best. This book and Mr. Bolas' lectures constitute all that is worth reading on the subject.

Dr. Liesgang's *Manual of Carbon Printing*, Sampson Low and Co.

Messrs. Welford and Sturmey's *Photographer's Indispensable Handbook.* Iliffe and Son.

Mr. Chapman Jones' *Science and Practice of Photography.* Iliffe and Son.

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Illustrated with Forty Plates from Nature, mounted on plate paper size 17 × 12 inches. *Edition de luxe*, limited to 100 copies, bound in vellum, with black and gold decorations, plates mounted on India paper, and text printed on finest white paper. Price £10 10*s.* Ordinary Edition, handsomely bound in cloth, plates mounted on finest plate paper, and text printed on fine white paper, limited to 750 copies. Price £6 6*s.*

This Work contains a valuable Essay on "Landscape," including Photography, by the landscape painter T. F. Goodall, and should be studied by all Photographers.

(SAMPSON LOW & Co., Ld., St. Dunstan's House, Fetter Lane, E.C.)

Opinions of the Press.

"We feel grateful to Dr. Emerson and Mr. Goodall for a most fascinating volume. There is something singularly characteristic and attractive in the scenery of the Norfolk Broads, as there is much that is peculiar and picturesque in the manners of the primitive population. . . . The series of illustrations seem to embrace and exhaust the whole range of local subjects. We are taken through wildernesses of wood and water, through sedgy solitudes, haunted by shy water-fowl, along winding river-reaches with wherries under sail. We are landed in quaint nooks of that watery world, where the tumble-down cottage of the fisherman or the fowler hangs over the rushy creek; we see the lonely farmhouse, with its sedge-thatched and straggling outbuildings, standing somewhat apart between marsh and cloudland; or the sequestered hamlet huddled round the little church, with the rude spire which is a landmark for leagues along the water-ways. We are shown the amphibious people following their multifarious occupations, with their farming, and their fishing, and their strange fashions of fishing. . . . The set of landscapes which close the volume are excellent as works of art, and they give an admirable idea ot the somewhat melancholy charms of the scenery, when it does not happen to be lighted up by brilliant sunshine."—*The Times.*

"Good wine needs no bush, and the Norfolk scenery needs no praise; but one may blamelessly sing in praise of good wine and the singing be but good, and write of or photograph Norfolk meritoriously. This Messrs. Emerson and Goodall have done, and done well, for which they deserve much thanks."—*Saturday Review.*

"The life depicted in this charming series of photographs is still redolent of the past. The wide expanse of flowery pasture-land, the smooth and pellucid waters, the picturesque craft, and the hardy good-humoured Broadsmen with their nets and meaks, are admirably represented, while the descriptive letterpress will recall many of his own experiences to the reader familiar with East Anglian waters."—*Morning Post.*

"Dr. Emerson has in this work applied the art of photography in so triumphant a manner, that the fitful breezes are clearly caught on the water, and seen playing amongst the heads of the reeds. . . . We can vouch for their wonderful fidelity to Nature. Nothing like it has ever been published."—*The Field.*

"'Life and Landscape on the Norfolk Broads' is a book of unique artistic interest . . . The prevailing tone of the pictures is restful and subdued. There is much of quiet cloudy sky and long evening light. And the general impression left by the illustrations, even when representing the characteristic industries of the Norfolk work-a-day world, is singularly free from anything approaching to hurry and turmoil. The claims of photography to rank among the true means of artistic production were never better exhibited than in this series of studies. . . . They leave no possible doubt of Dr. Emerson's manipulatory skill, or of the tasteful discrimination of the fellow art-workers."—*The Globe.*

"'Life and Landscape on the Norfolk Broads' is the name of a really beautiful book. . . . The text is descriptive, and pleasantly descriptive, of the scenes reproduced from nature. . . . We have seldom, perhaps never, seen such successful studies of landscape made by any mechanical process. . . ."—*Daily News.*

"It is enough to know that they are exquisitely beautiful. It has sometimes been contended that photography is not art. That view has had to be modified. It has been shown that in the hands of artists photography can be used with admirable effect. If proof of this be required, it will be found in this volume. There is nothing of the wooden stiffness of the old photographs about the pictures. . . . Some of them might be reproductions in monochrome of Corot's pictures. Light and shade are exquisitely managed. Every picture is arranged with the truest taste. . . . Then all the plates are redolent of the spirit of the scene."—*Scotsman.*

"The volume of 'Plates from Nature' which Messrs. Emerson and Goodall have just published to illustrate 'Life and Landscape on the Norfolk Broads' is an extraordinary achievement in photography. . . . Messrs. Emerson and Goodall have now taken them up, and mirrored their river highways and their shy retreats alike with a uniform success, which must have been the result of extraordinary skill and patience. . . . The peasants and watermen gave, it is clear, much information about life on the Broads, which the authors have occasionally worked up into very interesting letterpress."—*Pall Mall Gazette.*

"That beautiful series of forty plates, with their accompanying letterpress, illustrating 'Life and Landscape on the Norfolk Broads,' are an unanswerable refutation of those who say there is no art in photography. Mr. P. H. Emerson, B.A., and T. F. Goodall have been round the fens with camera and note-book to some purpose. . . . There is every quality in many of them of thoroughly good pictures. . . . No episode or incident seems to be inaccessible to these skilful artists."—*Daily Telegraph.*

"They have studied the Broads in all seasons and in all aspects, in the full light of the cloudless summer mornings, and in the autumn evenings when the light grows dim, and the result is forty plates in platinotype, of great variety, of singular interest, and of remarkable beauty. . . . Both the authors of the illustrative text are accomplished writers, and their articles are of unusual merit."—*The School Board Chronicle.*

"'Life and Landscape on the Norfolk Broads' is an epoch-making book, because such perfection of photography, such perfection of reproductive processes, and such perfection of artistic feeling have never before been brought together."—*Amateur Photographer.*

"Now and then in the past we have seen occasional photographs such as Dr. Emerson now presents, but to him is due the credit of endeavouring to form a real and truthful school of photographic representation."—*Photographic News.*

"Thus we have fishermen and women engaged in all the phases of labour which the water-wastes of Norfolk afford, and all happily unconscious that they are standing for their portraits—none of them staring into the camera in ordinary photographic fashion, but all pursuing their avocations in an unaffected and natural manner. This is a rare excellence, which is deserving of all praise, and the value of the plates as truthful illustrations of the ordinary work and demeanour of the people is greatly enhanced by the judgment and skill manifested in this particular. . . . The letterpress which accompanies the plates is not the least entertaining part of the book."—*Manchester Guardian.*

PICTURES FROM LIFE IN FIELD AND FEN.

By P. H. Emerson, B.A., M.B. (Cantab.).

Being Twenty Plates in Photogravure reproduced from Dr. Emerson's Original Negatives by Messrs. Dawson & Co., Boussod, Valadon & Co., Walker & Boutall, and the Autotype Co., together with an Introductory Essay on Photography and Pictorial Art. The Plates are enclosed in a handsome Portfolio. *Edition de luxe*, limited to 50 numbered copies, Plates on India paper, size 20 × 16 inches. Price £5 5*s*. Ordinary Edition, limited to 550 copies, with Plates on fine plate paper, same size. Price £3 3*s*.

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Opinions of the Press.

"His compositions remind us more of paintings than of any mechanical reproductions of Nature. 'Sunrise at Sea,' 'The Barley Sele,' 'The Faggot-Cutters,' 'At Plough,' 'A Winter's Morning,' and 'The Mangold Harvest,' are all well chosen and cleverly arranged compositions, and they show us that it is by no means so impossible to combine in photography the human figure and natural landscape, and to tell a simple pictorial story, as is commonly believed. We congratulate Mr. Emerson on this achievement; his work, at all events, deserves that praise which is due to those who try to raise the art to which they are devoted, and to carry it a step farther than is usually considered necessary. It is something to have carried photography a step farther in the direction of art, and Mr. Emerson is fairly entitled to claim this praise."—*Spectator.*

"He has spoken, as well as taken, twenty original negatives, and has done both to good purpose. A man must have penetrated into the inner circle of the lives of our East Anglian peasantry before he could have the chance of witnessing some of the scenes which he so sympathetically represents. . . . Many will look at the beautiful series of plates in photogravure, and be charmed with the skill with which they have been manipulated. We find our highest pleasure in approving the carefulness with which the real types have been selected and the 'environment' made appropriate."—*The Field.*

"Dr. Emerson's very handsome folio of twenty plates of varied subjects, mostly found in the above county, is useful as showing what care in grouping, and tact and judgment in selecting points of view, will do towards producing effective pictures when the photographer combines the qualities referred to."—*Artist's Record.*

"Dr. Emerson . . . has been the teacher of a new school of art photography and he has now a large following, many of whom are endeavouring to do work as good and true to the 'school' as the examples that are before us. . . . As a source of study for amateur photographers and as a drawing-room book we highly recommend 'Life in Field and Fen' to all our readers. As specimens of reproductions of photographs the plates are beyond praise, and the book is beautifully printed and got up in a most artistic manner."—*Amateur Photographer.*

"How far photography can go is well shown in this carefully prepared defence of it as an art."—*Athenæum.*

"When we say that Dr. Emerson has so used his camera as to truly represent Nature, we say the highest. . . . Having with rare judgment steered clear of doubtful and, to the camera, impossible subjects, Dr. Emerson has given us some delightful photographic pictures, which not only represent, but also interpret Nature. . . . Dr. Emerson evidently intends to form a school in photography, and has resolved to show photography at its best."—*Photographic News.*

"Dr. Emerson, the producer of this fine portfolio of photogravures, represents to some extent a new effort to get home once more to Nature, and he enters into the battle as a photographer. . . His seascapes are exquisite. . . . 'A Suffolk Dyke' (a charming study of river and Suffolk fen), and 'Breydon Water,' sea-fog coming up (a sweet picture, full of all the feeling of the place). . . . The work is of a very choice character."—*School Board Chronicle.*

"Exquisite photographs exquisitely reproduced."—*Pall Mall Gazette.*

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"It is marvellous how completely Dr. Emerson appears to have mastered the difficulties which have attended the use of the camera. No painter could have produced anything more charmingly true to Nature, more suggestive of real life and interest, than many of the pictures in this volume. They are admirably taken, with a carefulness in regard to light and shade that has rarely been approached."—*The Scotsman.*

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"In 'Idyls of the Norfolk Broads" Mr. P. H. Emerson still further adds to our knowledge of the pastoral life and landscape of the English Fens. He is in love with the country—he calls it an earthly paradise; and never did lover sing the praises of his mistress with more enthusiasm than does Mr. Emerson the distinctive beauties of this land of mists and marshes and sweet-scented meadows, with its industrious and homely people. . . . The scenes have been selected with an artist's eye, and are reproduced in really a delightful manner—two especially are very pleasing—Flowers of the Mere,' in which we have the head of a charming little village maiden, and 'A Grey Day Pastoral,' the silvery tones of which have at least been suggested in black and white. Accompanying each plate is a concise, well-written description of the scenery depicted."—*Scotsman.*

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Press Opinions.

"It is a monograph, pictorial and literary, on the Suffolk peasantry and fisherfolk—a natural history of one of the most interesting of English race-types. . . . Hedger and ploughman, fisher and boor, as they are pictured in these exquisite engravings, they have a not too remote resemblance to

the melancholy peasant of Millet. . . . The author has something of his eye for the bovine-human type, for the fine artistic gloom of life and mind of the fields."—*Daily News* (Leader).

'After a hasty glance at Mr. P. H. Emerson's handsome large quarto volume . . . one is disposed to characterize it as the prose of Dr. Jessop's 'Arcady.' On better acquaintance, we see that there is in Mr. Emerson's book also a great deal of the poetry of real life. We . . . claim that in ordinary village ways as sketched by Mr. Emerson, and in village character, hard and uninviting as it seems to the outsider, there is 'poetry' enough. . . . He has plenty of quiet humour. . . . Of some of the plates, which form such a feature in this volume, it is impossible to speak too highly."—*The Graphic.*

"It might almost be said to be descriptive by anecdote, of which the author seems to have a rare store, on every aspect of the subject with which he deals. His book is undoubtedly . . . 'a contribution to a natural history of the English peasantry and fisherfolk.' . . . In this series of East Anglian books Mr. Emerson has distinctly elevated landscape photography. His scenes are selected with the eye of a true artist. . . . To a certain extent Mr. Emerson may be said in these pictures to have done for the peasantry of East Anglia what Jean François Millet did for those of his own country."—*Scotsman.*

"In 'A Stiff Pull' and 'In the Barley Harvest,' both capital subjects, capitally treated, he has been successful enough to make us wish that Millet had painted in Suffolk instead of at and about Chailly-en-Bière. In another plate, 'The Farm by the Broad,' he contrives to give us something of the effect of . . . a Corot. In . . . 'Going Out' and . . . 'Coming Ashore' he reminds us a little of Mesdag; in other plates . . . of the followers of Bastien Le Page."—*Saturday Review.*

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"Dr. Emerson's new book is one which no county family's library in Suffolk should be without. . . . Dr. Emerson has studied the Suffolk peasantry with conscientious thoroughness and approached his subject with sincere sympathy for the hardness of their life."—*Pall Mall Gazette.*

"All who have felt the peculiar attraction of East Anglian scenery are grateful to Dr. P. H. Emerson for his splendid photogravures. . . . This splendidly got-up folio is an important work, reflecting high credit on all concerned in its production. We hope Dr. Emerson will not allow his camera to lie idle. . . . Dr. Emerson has been a close observer of their character and intelligence, and has much that is curious to say."—*Westminster Review.*

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"Mr. P. H. Emerson has produced a really valuable book. His text, descriptive of the life, superstitions, and character of Suffolk peasantry and fisherfolk, their stories of the land and stories of the sea, are all of the greatest interest, and in many cases have the merit due to original inquiry and research. . . . Mr. Emerson, one of the foremost, and in some respects one of the most successful, of living photographers, has illustrated his large work with thirty-two photogravures . . . the full-page plates are often of the highest merit. 'The Clay Mill,' and especially 'The Haymaker with Rake,' are so good in tone that they almost suggest the work of Millet. 'Where winds the Dike,' reminds the spectator of Corot."—*Magazine of Art.*

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"Dr. Emerson gives us not only a mass of valuable and interesting letterpress, but a collection of very remarkable photo-engravings. By no one has photography been more diligently and more successfully applied to illustrate not country scenes only, but country life. . . . His pictures never look like compositions—indeed, he is as successful with some of his groups as with mere landscapes. . . . The letterpress . . . proving on every page that he has not only lived among the people whom he describes, but that he is quite in touch with them. . . . Dr. Emerson is a keen observer of men as well as of nature. . . . He is for the most part thoroughly reasonable. . . . I am grateful to him, for I have learnt much from his book, and have been put in the way of (I hope) learning much more."—*Academy.*

"Nothing could well be better selected or executed than are the photogravures, and even the small illustrations of the book. In these he has caught 'the very form and spirit of the times' in East Anglia. . . . His landscapes . . . recall Constable's pictures."—*Field.*

"This is a delightful book . . . indeed, no one can study the illustrations and read the accompanying text without becoming imbued with the author's enthusiasm, and without feeling that he has gained an entirely new insight into the character and surroundings of the English peasant. So artistic are the illustrations, with their Corot-like softness of outline, that in future no book that deals with an unfamiliar country will seem complete without such aids. . . . There should be, and no doubt there will be, books such as this about every corner of the globe, and Mr. Emerson is to be thanked for setting the example."—*New York "Nation."*

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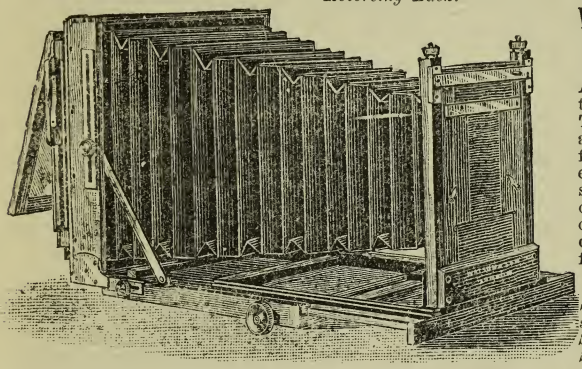

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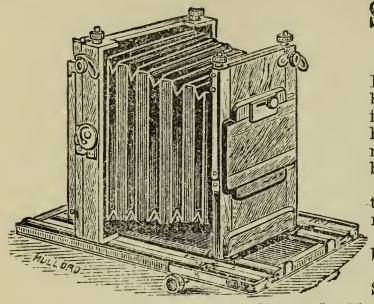

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Russia leather bellows, extra:—$4\frac{1}{4}\times3\frac{1}{4}$ or 5×4, 17s.; $6\frac{1}{2}\times4\frac{3}{4}$ to 8×5, £1 2s.; $8\frac{1}{2}\times6\frac{1}{2}$, £1 4s.; 10×8, £1 6s.; 12×10, £1 15s.; 15×12, £2 10s.

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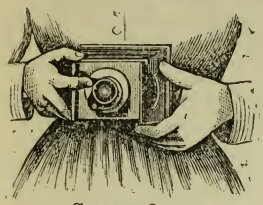
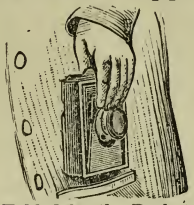
SHEW'S ECLIPSE POCKET CAMERA,

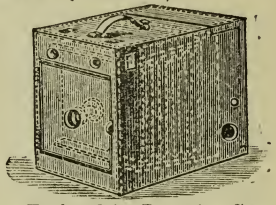
or Fixed Focus Hand Apparatus (Patent).



CAMERA OPEN ready for use.



Folded for the Pocket. Weight 12 ounces, for Pictures $4\frac{1}{4} \times 3\frac{1}{4}$.



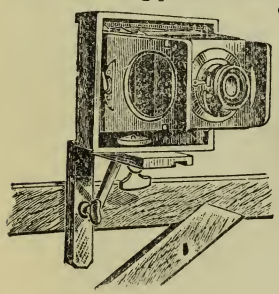
Enclosed in Detective Case with Roller Slide for 48 Pictures or three Double Backs.

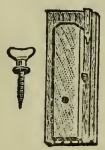
We would call special attention to the superiority of the results obtained with this little instrument over those of the many others introduced since we first made the Eclipse. As a first-class working instrument it still has no rival.

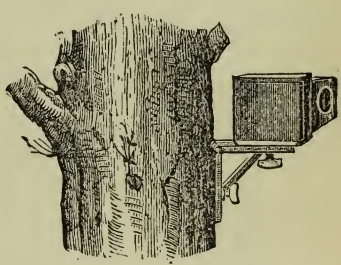
Street Views, Groups, Architectural subjects, Landscapes, Panorama, &c., are obtained with marvellous detail, particularly suitable for Lantern Transparencies and for enlarging to an extraordinary extent.

Size.	Apparatus Complete, one Double Back.	Fitted with Roller Slide for 48 Pictures.	Three Double Backs fitted for	Detective Case for Roller Slide, and Camera open, or three Double Backs.
$3\frac{1}{4} \times 3\frac{1}{4}$ ...	£4 4 0	—	£1 13 0	—
$4\frac{1}{4} \times 3\frac{1}{4}$ ...	4 9 0	£6 5 0	1 13 0	£1 1 0
5 × 4 ...	5 0 0	7 10 0	1 18 6	1 5 0
$6\frac{1}{2} \times 4\frac{3}{4}$ ...	6 0 0	8 15 0	2 5 0	1 5 0
12 × 9 centimeters,	5 5 0	7 5 0	1 16 0	1 5 0
16 × 12 ,,	6 0 0	8 15 0	2 5 0	1 7 6
18 × 13 ,,	6 10 0	9 7 6	2 8 0	1 10 0

Screw and fitting plates to Camera for use on Stand, Clip, or Camera Rest, for Landscape or Portrait, either size, 2/-







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An Ingenious Substitute for a stand where it is impossible, through want of light or other causes, to obtain an instantaneous exposure. Instantly attaching the Camera to any wooden projection. **No tourist should be without it.**

	Weight.	Size.	Price, post free.
For ¼-Plate Cameras	2½ oz.	$4\frac{1}{2} \times 2 \times \frac{3}{4}$ in.	3/3
For ½-Plate ,, ...	6 ,, ...	$7\frac{1}{2} \times 2\frac{1}{2} \times 1$,, ...	4/3

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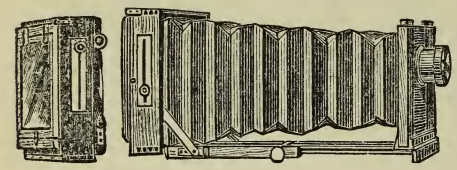
INVENTED AND INTRODUCED, JUNE, 1882.

The Best and most compact Camera ever Invented.



Since its introduction, this Camera has received several important modifications in construction. It stands unrivalled for elegance, lightness, and general utility. It is specially adapted for use with the Eastman-Walker Roll Holder. A $6\frac{1}{2} \times 4\frac{3}{4}$ Camera measures when closed $8 \times 8 \times 2\frac{1}{2}$ in., weighs only 4 lbs., and extends to 17 in. The steady and increasing demand for this Camera is the best proof of its popularity.

"Little need be said of Mr. George Hare's well-known Patent Camera, except that it forms the model upon which nearly all the others in the market are based."—Vide *British Journal of Photography*, August 28, 1885.

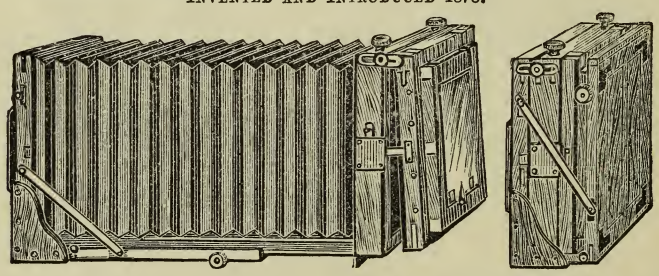
Size of Plate.	Square, with Reversible Holder.	Brass Binding.
5 × 4	£6 0 0	£0 16 0
$6\frac{1}{2} \times 4\frac{3}{4}$	7 2 6	1 0 0
$7\frac{1}{2} \times 5$	7 10 0	1 0 0
$8\frac{1}{2} \times 6\frac{1}{2}$	8 15 0	1 0 0
10 × 8	£9 16 0	£1 4 0
12 × 10	11 0 0	1 6 0
15 × 12	13 5 0	1 10 0

These prices include one Double Slide.

Since this Camera has been introduced, it has been awarded **THREE SILVER MEDALS**: at Brussels International Photographic Exhibition, 1883; at the Royal Cornwall Polytechnic Society, Falmouth; and at the INTERNATIONAL INVENTIONS EXHIBITION, 1885. Also Bronze Medal, Bristol International Exhibition, 1883—HIGHEST AWARD.

G. HARE'S Improved Portable Bellows Camera.

INVENTED AND INTRODUCED 1878.



This Camera offers many advantages where a little extra weight and bulk is not objected to. It is very solid and firm in construction, and especially suited for India and other trying climates.

PRICES, with one Double Slide and Hinged Focussing Screen :—

For Plates.	Horizontal and Vertical.	Square, with Reversible Holder.	Brass Binding.
$6\frac{1}{2} \times 4\frac{3}{4}$	£6 7 6	£7 12 6	£1 0 0
$8\frac{1}{2} \times 6\frac{1}{2}$	7 18 0	9 5 0	1 0 0
10 × 8	9 4 0	10 16 0	1 5 0
12 × 10	10 13 0	12 5 0	1 10 0
15 × 12	13 5 0	15 10 0	2 0 0
18 × 16	20 15 0	24 0 0	2 10 0

For Prices of Extra Dark Slides and Inner Frames, See Catalogue.

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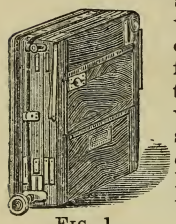

FIG. 1.

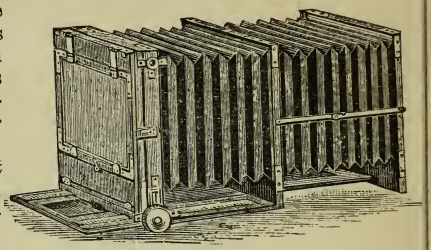

FIG. 2.

This Camera is Light, Portable, and quickly set up ready for use, and is perfectly rigid when extended. Fig. 1. shows the Camera packed up.

Fig. 2 shows the Camera with Reversing Frame and Front extended. Each Camera is supplied with two Fronts which can be raised or lowered as required.

MEAGHER'S IMPROVED PORTABLE BELLOWS CAMERA.

Specially constructed for use with Dry Plates. It is fitted with Single or Double Action Swing Back, and the focussing is effected by Screw or Rack Adjustment. Prices, with Single Swing Back and three Double Backs, each carrying two Prepared Plates :—

For 5×4	£5 15 0
Ditto, with Double Swing Back, Reversing Frame, and Extending Front for Long Focus	8 5 0
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Ditto, with Double Swing Back, Reversing Frame, and Extending Front for Long Focus	9 11 0
For 7½×5	7 5 0
Ditto, with Double Swing Back, Reversing Frame, and Extending Front for Long Focus	9 15 0
For 8½×6½	8 10 0
Ditto, with Double Swing Back, Reversing Frame, and Extending Front for Long Focus	11 15 0
For 10×8	10 5 0
Ditto, with Double Swing Back, Reversing Frame, and Extending Front for Long Focus	14 5 0

BRASS-BINDING CAMERA and Three Double Backs up to $8\frac{1}{2} \times 6\frac{1}{2}$, £1 8s.; 10×8, £1 13s.

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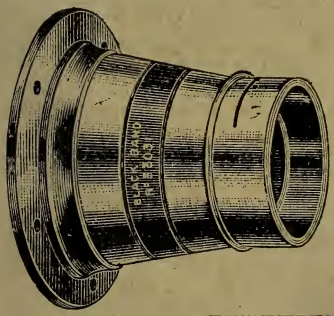

PRICES.

No. 1.	...	Size 5	×	4	...	£1	11	6
,, 2.	...	,, 7	×	5	...	2	12	6
,, 3.	...	,, 8½	×	6½	...	3	13	6
,, 4.	...	,, 10	×	8	...	4	14	6
,, 5.	...	,, 12	×	10	...	5	5	0

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See descriptive Catalogue.

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A, for Cabinets, in short rooms, dia. 2⅜ in., distance 14 ft.	£13	0	0
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5A, for plates 15×12 and under, dia. 5 in., focus 18 in.	50	0	0
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D, Portraits 15×12, Views 18×16, dia. 4 in., focus 19½ in.	26	10	0
D, Portraits 18×16, Views 22×20, dia. 5 in., focus 24 in.	48	0	0
D, Portraits 22×20, Views 25×21, dia. 6 in., focus 30 in.	58	0	0

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Patent Stereographic Lens, 3½ in. f.	£4	5	0
Ditto, with rack-and-pinion	4	15	0
No. 1, Quick-acting Single Combination Landscape Lens, 4½ in. focus	2	0	0
No. 2, Ditto ditto 6 in. focus	2	5	0
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Condensers—3½ in. dia. mounted, ea.	5	5	0
Do. 4 in. do. do. ...	6	6	0

NEW RECTILINEAR LANDSCAPE LENS (Patent).

No.	Largest Dimensions of Plate.	Diameter of Lenses.	Equiv. Focus.	Price.
1	6½ by 4¾ in.	1⅜ in.	8½ in.	£4 15 0
2	8½ ,, 6½ ,,	1¾ ,,	11½ ,,	6 0 0
3	10 ,, 8 ,,	2 ,,	13½ ,,	8 0 0
4	12 ,, 10 ,,	2½ ,,	16½ ,,	10 5 0
5	15 ,, 12 ,,	2¾ ,,	20 ,,	12 10 0
6	18 ,, 16 ,,	3 ,,	25 ,,	16 0 0
7	22 ,, 20 ,,	3½ ,,	32 ,,	21 0 0

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The best Lens for general use out of doors, and for Copying.

Size of View or Landscape.	Size of Group or Portrait.	Equiv. Focus.	Price, Rigid Setting.
4½ by 3¼ in.	3¼ by 3¼ in.	4 in.	£3 15 0
5 ,, 4 ,,	4¼ ,, 3½ ,,	6 ,,	4 10 0
8 ,, 5 ,,	5 ,, 4 ,,	8½ ,,	5 10 0
8½ ,, 6½ ,,	8 ,, 5 ,,	11 ,,	7 0 0
10 ,, 8 ,,	8½ ,, 6½ ,,	13 ,,	9 0 0
12 ,, 10 ,,	10 ,, 8 ,,	16 ,,	11 0 0
13 ,, 11 ,,	French size	17½ ,,	12 0 0
15 ,, 12 ,,	12 by 10 in.	19½ ,,	15 0 0
18 ,, 16 ,,	15 ,, 12 ,,	24 ,,	20 0 0
22 ,, 20 ,,	18 ,, 16 ,,	30 ,,	27 0 0
25 ,, 21 ,,	22 ,, 20 ,,	33 ,,	32 0 0

WIDE ANGLE RECTILINEAR (Patent),
For Architectural Views in Confined Situations.

No.	Largest Dimensions of Plate.	Back Focus.	Equiv. Focus.	Price.
*1AA	7½ by 4½	3½ in.	4 in.	£4 10 0
1A	8½ ,, 6½	4⅝ ,,	5¼ ,,	5 10 0
1	12 ,, 10	6¼ ,,	7 ,,	7 10 0
2	15 ,, 12	7⅞ ,,	8½ ,,	10 10 0
3	18 ,, 16	11 ,,	13 ,,	14 0 0
4	22 ,, 20	14 ,,	15½ ,,	20 0 0
5	25 ,, 21	17 ,,	19 ,,	30 0 0

* To be had in pairs for Stereoscopic Views.

WIDE ANGLE LANDSCAPE LENS, (Patent), for Landscapes, pure and simple.

No.	Size of Plate.	Equivalent Focus.	Price.
1A	5 by 4	5¼ in.	£3 5 0
1	7½ ,, 4½	7 ,,	3 15 0
2	8½ ,, 6½	8½ ,,	4 10 0
3	10 ,, 8	10 ,,	5 10 0
4	12 ,, 10	12 ,,	7 0 0
5	15 ,, 12	15 ,,	8 10 0
5A	15 ,, 12	18 ,,	9 10 0
6	18 ,, 16	18 ,,	10 10 0
7	22 ,, 20	22 ,,	14 0 0
8	25 ,, 21	25 ,,	19 0 0

NEW RAPID LANDSCAPE LENS, For Distant Objects and Views.

No.	Largest Dimensions of Plate.	Diameter of Lenses	Equiv. Focus.	Price.
1	6½ by 4 in.	1·3 in.	9 in.	£4 10 0
2	8½ ,, 6½ ,,	1·6 ,,	12 ,,	5 15 0
3	10 ,, 8 ,,	2·125 ,,	15 ,,	7 10 0
4	12 ,, 10 ,,	2·6 ,,	18 ,,	9 10 0
	15 ,, 12 ,,	3 ,,	22 ,,	11 10 0
6	18 ,, 16 ,,	3·5 ,,	25 ,,	14 0 0
7	22 ,, 20 ,,	4·25 ,,	30 ,,	17 10 0

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